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Colortrac

Our Business is Your Image

SmartLF Ci Scanners Service Manual

Ci Scanners

Ci24m, Ci24c & Ci24e
Ci40m, Ci40c & Ci40e

Service Manual

Issue 10

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CONTENTS

1. INTRODUCTION 5
1.1. SCANNER MODELS 5
2. TOOLS REQUIRED 6
3. OBTAINING TECHNICAL SUPPORT FROM COLORTRAC 7
3.1. CREATING AN ACCOUNT 7
3.2. USER PROFILES 7
3.3. SUBMITTING REQUESTS FOR SUPPORT 7
3.4. ASSET SELECTION 7
3.5. SUPPORT TICKET INFORMATION 7
4. HOW TO CONTACT TECHNICAL SUPPORT 8
5. SAFETY 8
5.1. SAFETY WARNINGS 8
5.1.1 Electrical 8
5.1.2 Mechanical 8
5.1.3 Weight 8
5.1.4 Rotating Rollers 8
5.2. EMC TESTING 8
6. SCANNER CAUTIONS 9
7. WARRANTY 10
7.1. WARRANTY PERIOD 10
7.2. CONSUMABLES 10
7.3. CIS REPLACEMENT UNDER WARRANTY 10
7.4. PURCHASE OF CIS 10
8. CIS TECHNOLOGY 11
9. SCANNER ACCESSORIES 13
9.1. USB CABLE TYPE A AND B 13
9.2. EXTERNAL POWER SUPPLY 14
10. SCANNER INFORMATION 15
10.1. BLOCK DIAGRAM 15
10.2. SCANNER OPERATION 16
10.3. SCANNER MAINTENANCE POSITION 17
11. REMOVING AND REPLACING PANELLING 19
11.1. LEFT END COVER 19
11.2. RIGHT END COVER 21
11.3. LID COVER EXTRUSION SUB-A 24
11.4. PCB TRAY 28
11.5. PAPER TRAY SUB-A 37
12. REMOVING AND REPLACING COMPONENTS 41

12.1. MAIN TIMING BELT 41
12.2. MYLAR PAPER GUIDE SUB-A 43
12.3. ROLLER SHAFT PULLEY 46
12.4. CONTROL BOARD 49
12.5. MAIN BOARD 52
12.6. CIS PLATE ASSEMBLY 55
12.7. MAIN ROLLER 65
12.8. UPPER PAPER SENSORS 68
12.9. LOWER PAPER SENSOR 70
12.10. POWER SWITCH 72
12.11. LID POWER CUT OFF SWITCH 74
13. UTILITIES PROGRAMS 81
13.1. INSTALLATION 81
13.2. CONFIGURING THE MAIN BOARD 82
13.3. RUNNING UTILITIES 83
13.4. NORMALISATION 86
13.5. AUTO STITCH 87
14. UPGRADING 88
15. HELP DESK 89
15.1. EXTENDING WARRANTY 89
15.2. CREATING A HELPDESK TICKET 91
16. NETWORK CONFIGURATION 93
16.1. NETWORK COMPONENTS 93
16.2. NETWORK CONFIGURATION 93
16.3. NETWORK CONSIDERATIONS 94
17. DIAGNOSTICS 94
17.1. INTRODUCTION 94
17.2. UPDATES 94
17.3. DIAGNOSTIC - NETWORK CONNECTION 95
17.4. MAIN BOARD 98
18. FEATURES NOT INCLUDED 101

1. INTRODUCTION

1.1. SCANNER MODELS

This manual contains information for reference by qualified service engineers, trained in the repair of the SmartLF Ci scanner.

There is 6 Ci scanner Models:

SmartLF Ci24m — Monochrome
- Scan width of 24 inches
- Handles 25.67 inch media
- Optical resolution of 600dpi
- Mono and greyscale scanning
- Contains 3 x CIS Arrays

SmartLF Ci24c — Colour
- Scan width of 24 inches
- Handles 25.67 inch media
- Optical resolution of 600 dpi
- RGB (24-bit and 48-bit captured) at normal speed
- Mono and greyscale
- Contains 3 x CIS Arrays

SmartLF Ci24e — Enhanced
- Scan width of 24 inches
- Handles 25.67 inch media
- Optical resolution of 600 dpi
- RGB (24-bit and 48-bit captured) at enhanced speed
- Mono and greyscale scanning
  Contains 3 x CIS Arrays

SmartLF Ci40m — Monochrome
- Scan width of 40 inches
- Handles 41 inch media
- Optical resolution of 600dpi
- Mono and greyscale scanning
- Contains 5 x CIS Arrays

SmartLF Ci40c — Colour
- Scan width of 40 inches
- Handles 41 inch media
- Optical resolution of 600 dpi
- RGB (24-bit and 48-bit captured) at normal speed
- Mono and greyscale
- Contains 5 x CIS Arrays

SmartLF Ci40e — Enhanced
- Scan width of 40 inches
- Handles 41 inch media
- Optical resolution of 600 dpi
- RGB (24-bit and 48-bit captured) at enhanced speed
- Mono and greyscale scanning
- Contains 5 x CIS Arrays

2. TOOLS REQUIRED

To maintain the Ci40 scanner the tools listed below are required. The tools are generally available; they are not the responsibility of Colortrac to supply.

1. 1mm Allen Key
   - *or 1mm Hex Key*
2. 1.5mm Allen Key
   - *or 1.5mm Hex Key*
3. 3mm Allen Key
   - or 3mm *Hex* Key
4. Pliers.
   - Flat nosed pliers, short serrated.
5. 7mm Nutdriver.
   - To remove and fit M5 nuts.
6. Medium Pozi-drive screwdriver.
   - PZ1 *x 80mm length.*
7. Small Pozi-drive screwdriver.
   - PZ0 *x 60mm length.*
8. Thread-lock
   - *Or '*Tamper *Proof Seal', to prevent nuts becoming loose.*
9. Medium sized Stubby Pozi-driver screwdriver.
   - PZ1 *x 30mm length.*
10. Small Flat Screwdriver
    - *3mm* blade *x 65mm length (approx.)*
11. Spanner
    - *5.5mm Open Ended*
12. Tweezers
    - *Thin* tipped*, serrated*

3. OBTAINING TECHNICAL SUPPORT FROM COLORTRAC

Colortrac uses an on-line service desk facility called the Colortrac Global Help Desk to manage requests for technical support for the Ci scanner. The URL for the Help Desk is www.colortrac-helpdesk.com. All requests for support for the Ci scanner must be registered via the Help Desk. By using the Help Desk, Colortrac may better manage support calls to provide customers a better service.

For each support call, the Help Desk automatically raises a ticket. The ticket is the means to communicate the progress and status of the support call, and other information. Users may access and update ticket information through their User accounts at the Help Desk URL.

3.1. CREATING AN ACCOUNT

Distributors do not need to contact Colortrac to raise a Help Desk User account. The Help Desk is programmed to accept new accounts that use specific email domains. But, Distributors who find they cannot create a User Account should contact Colortrac Technical Support.

3.2. USER PROFILES

We ask Users who log in for the first time to update their profile. Some information we require and some we leave to the Users discretion to provide. But the more complete the information provided the better Colortrac can provide support.

3.3. SUBMITTING REQUESTS FOR SUPPORT

To submit a request for support, Users must logon to the Help Desk and select the 'Request' icon. Dependant on the request type, Users will be asked to provide the additional information Colortrac needs to progress the request quickly.

3.4. ASSET SELECTION

Colortrac uses the Help Desk to associate support calls with scanner assets. For this reason Distributors are requested to select the scanner associated with their request for support. Those scanners a Distributor has received from Colortrac are listed at the bottom of the page. Distributors may select the scanner the call is related to. If the scanner is not listed please enter the serial number in the box provided.

3.5. SUPPORT TICKET INFORMATION

In the detail of each ticket Users can expect to see:

- All pertinent information to the investigation
- Regular updates on progress.
- Requests for further information or activity.
- The solution or outcome.
- Closure agreement.

The notes facility can be used to provide further information.

4. HOW TO CONTACT TECHNICAL SUPPORT

Contact Numbers	• Support Direct Line: +44 (0) 1480 409997 • Company Tel No: +44 (0) 1480 464618 • Company Fax No: +44 (0) 1480 464620
Helpdesk	• www.colortrac-helpdesk.com
Technical Downloads (software, firmware, drivers)	• www.colortrac.com/support/support_downloads.htm

Technical FTP Website (manuals, catalogues, price lists)	• www.colortracsupport.co.uk
	  • User name: colortrac
	  • Password: *contact support for password*

5. SAFETY

5.1. SAFETY WARNINGS

5.1.1 Electrical

Do *NOT* remove any covers from the scanner while the power is on or allow an end user to operate the scanner with ANY covers removed. Engineers must exercise extreme caution while working on any scanner.

It is advisable to allow the scanner 5 minutes to discharge before removing covers and any of the boards. The boards may hold a charge and may give a shock if touched.

Please observe anti-static precaution when handling any electrical boards from the scanner.

5.1.2 Mechanical

The mechanism that operates the lid and the paper handling assembly can trap fingers when closing. Please handle with care.

5.1.3 Weight

Because the weight of the scanner is approximately 24Kg, 2 people are required to lift the scanner.

5.1.4 Rotating Rollers

The scanner operates a roller to move the image across the scanner. These rollers may grip ties and any other similar articles of clothing, as well as long hair if put near the rollers during operation.

5.2. EMC TESTING

The SmartLF model conforms to EMC and FCC (Part B). EMC testing is carried out to ensure the Ci scanner does not emit signals that can interfere with other devices, and that no external interference signals will interfere with it.

6. SCANNER CAUTIONS

Do:

- Have 2 people to lift the scanner.
- Keep the packaging for continued shipment of the scanner.
- Normalise the scanner on first installation.
- Auto-stitch the scanner on first installation and then when required.
- Keep the auto-stitch and normalisation targets in a safe place for regular use.
- Use the approved and supplied cables for the scanner.
- Read the operator and installation manual before installation.
- Fill out and return the installation form as soon as possible.

Don't:

- Do not scan paper with any form metal fastener or post-it notes attached.
- Do not allow the scanner to get wet.
- Do not drop the scanner.
- Do not stand the scanner on its end (packaged or un-packed).
- Do not leave the scanner open for any length of time.
- Do not stand on the scanner.
- Do not balance the scanner on an unsafe surface.
- Do not scan thick or rigid media.
- Do not unplug the scanner during a scan sequence.
- Do not let an end user remove any panels from the scanner.
- Do not use any other power supply other than the approved one supplied with the scanner.
- Do not install the scanner on an un-even surface.
- Do not install in a dusty or dirty environment.
- Do not allow the USB / Ethernet cable to be pulled forcibly out of the scanner.

NOTE:
Before any work is carried out on the scanner, the power MUST be switched off and the Mains Lead removed from the scanner.

Notes:

- Most images in this manual are shown to be the Ci40 scanner, but the Ci24 is to be treated in the same way as instructed, unless otherwise stated. Some images may alternatively show the Ci24, but photos are for reference only, and indicate the Ci scanners generally.

- Some photos in this manual were taken during pre-production of the Ci scanner, and some colours / background design shown may vary from the actual scanner; however the instructions are still correct and should be followed as described.

7. WARRANTY

Each LF Scanner starts its warranty period when first shipped from Colortrac to the purchasing Distributor. Non-consumable parts that fail within the warranty period without inappropriate influence or action will be replaced free of charge.

Distributors are required to identify faulty parts. To help identify faults quickly it is recommended that Distributors hold spare parts. Parts that are replaced under warranty must be returned to Colortrac using the address at the front of this manual.

When a Distributor requests a warranty replacement, Colortrac Technical Support will issue them an RMA reference number. The warranty replacement is dispatched once Colortrac receives the defective part. In exceptional cases, Colortrac may agree to send a warranty replacement before the defective part has been received.

7.1. WARRANTY PERIOD

When applicable, a Distributor may request up to a maximum 3-mouth deferment of the start of a scanner's warranty period from the date it is delivered to the carrier at Colortrac, to coincide with its installation date. The deferment can be obtained by logging on to the Colortrac Help Desk and selecting ‘Notification of Installation Date’, see Chapter 15.1 On how to extend warranty.

7.2. CONSUMABLES

Parts that wear according to operator usage are deemed consumables and not replaced under warranty. Consumables can be purchased from Colortrac. Those Ci scanner parts considered to be consumables are:

- CIS (Subject to the provisions below)
- Mylar Paper Guide Strip
- Normalisation Target
- Auto Stitch target

7.3. CIS REPLACEMENT UNDER WARRANTY

A CIS will be considered a consumable and subject to replacement at the Distributor's expense, if it becomes inoperable due to wear and tear or damage to the glass front as a result of customer use. However, CIS will be replaced under warranty if it becomes inoperable due to electronic failure within the warranty period.

7.4. PURCHASE OF CIS

There are 3 methods for purchasing Ci CIS: normal purchase, glass replacement, and refurbished:

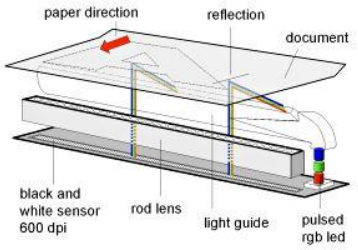
Normal Purchase. Distributors who wish to purchase CIS as spares or for similar reasons will be purchase them at the list price.

Glass Replacement. Distributors who wish to take advantage of our glass replacement scheme will purchase CIS at list price, return to Colortrac the 'scratched glass' CIS, and be reimbursed to the discounted rate.

Refurbished. CIS that have been refurbished through the glass replacement scheme will be available for purchase at a reduced rate.

8. CIS TECHNOLOGY

A Contact Image Sensor (CIS) is an integrated module that comprises an illumination system, an optical system and a light-sensing system - all within a single compact component.



Cross-section of a CIS scanner sensor.

The light-sensing system is the silicon surface which is divided up into (e.g. 5000) discrete square cells, the size of each being a fraction of an inch depending upon the required scanning resolution (a 600 dpi scanner will use a CIS whose cells are 1/600" across). The optical system is a rod lens array that directs light from the document surface onto the silicon surface. Such an optical system is 1:1; i.e. there is no reduction or enlargement; and this results in a scanner offering the best performance in terms of resolving power and geometric accuracy.

The illumination is provided by Light Emitting Diodes (LED's) shining down a light guide, which in turn directs the light onto the document. There are three LED's (Red, Green, and Blue) which strobe rapidly, thereby providing the colour content in the scan. Note that there are no colour filters in the optical or light-sensing system.

Ci scanner CIS Array

The colour gamut of a CIS scanner is therefore determined by the spectrum of each of the LED's, rather than by colour filters as is the case with CCDs. Because colour filter technology is more developed than LED spectrum technology, a CIS scanner will not provide as wide a colour gamut as a CCD scanner.
However, rapidly strobed LED's require no warm-up period. Therefore, a CIS scanner can be switched on and used immediately. Furthermore, LED's are very stable which means that a CIS scanner does not require frequent re-calibration.

Item		Specification		Note
Scanning width		216 mm		
Sensor element density		600 DPI	300 DPI	Switched by CNT H: 600DPI L: 300DPI
Effective number of sensor elements		5,102 elements 41th to 5,142th (Full5,184 elements)	2,552 elements 21th to 2,572th (Full2,592 elements)	
Scanning speed (μsec/line)	Color	230×3	120×3	
	B&W	230	120	
Clock speed		8.0 MHz		Note
Rod lens array		Single row		
Light source		Red λp = 630nm ± 15nm 60mA Green λp = 520nm ± 15nm 60mA Blue λp = 465nm ± 10nm 60mA		LED At least two LED vendors.
Power supply		+3.3V x 100 mA		
Data output		3 analog output		Synchronous
	Block #1	1,728 pixels	864 pixels	
	Block #2	1,728 pixels	864 pixels	
	Block #3	1,728 pixels	864 pixels	
Block diagram		Figure 5		
Dimensions		Figure 1		

Note: Clock Speed f must satisfy the following status:
f > (n +92) / tint
f : Clock speed
n: Full sensor elements number of every Block
600DPI: 1,728
300DPI: 864
tint: Scanning speed

Item	Symbol	Specification			Note
		Red	Green	Blue	
DC supply voltage	VDD	+3.3V			Detector, Logic
LED supply voltage	VLED	<3.0V	<5.0V	<5.0V	
LED supply current	ILED	20mA	20mA	20mA	
White image target		0.05 ~ 0.09 OD			
Timing diagram		Figure 6			
Dark reference	Dref	(800mV)			4.1
Dark output minimum	Vdmin	-100 ~ +200mV			4.2
White output maximum	Vpmax	600 ± 100mV			4.3 600DPI
Dark output uniformity	Ud	Less than Vpmax/2			4.4
White output uniformity	UEp	Less than 50%			4.5
MTF		30% MIN	30% MIN	30% MIN	4.6 71.37lppi
Linearity	Gamma	1.05 ± 0.05			
Linearity uniformity	LU	Less than 6 %			4.7

In Black and White Mode

Item	Symbol	Specification			Note
		Red	Green	Blue	
DC supply voltage	VDD	+3.3V			Detector, Logic
LED supply voltage	VLED	<5.0V	0V	0V	
LED supply current	ILED	20mA	0mA	0mA	
White image target		0.05 ~ 0.09 OD			
Timing diagram		Figure 6			
Dark reference	Dref	(800mV)			4.1
Dark output minimum	Vdmin	-100 ~ +200mV			4.2
White output maximum	Vpmax	600 ± 100mV			4.3 600DPI
Dark output uniformity	Ud	Less than Vpmax/2			4.4
White output uniformity	UEp	Less than 50%			4.5
MTF		30% MIN			4.6 71.37lppi
Linearity	Gamma	1.05 ± 0.05			
Linearity uniformity	LU	Less than 6 %			4.7

9. SCANNER ACCESSORIES

9.1. USB CABLE TYPE A AND B

Length: 2 meter max.
Speed: 480Mb/s

This high quality USB cable complies fully with the USB 2.0 specification.

The USB transfers signal and power over a four-wire cable. The signalling occurs over two wires on each point-to-point segment.
There are three data rates:

- The USB high-speed signalling bit rate is 480 Mb/s.
- The USB full-speed signalling bit rate is 12 Mb/s.

A limited capability low-speed signalling mode is also defined at 1.5 Mb/s.

USB 2.0 host controllers and hubs provide capabilities so that full-speed and low-speed data can be transmitted at high-speed between the host controller and the hub, but transmitted between the hub and the device at full-speed or low-speed. This capability minimises the impact that full-speed and low-speed devices have upon the bandwidth available for high-speed devices.
The low-speed mode is defined to support a limited number of low-bandwidth devices, such as mice, because more general use would degrade bus utilisation. The clock is transmitted, encoded along with the differential data. The clock encoding scheme is NRZI with bit stuffing to ensure adequate transitions. A SYNC field precedes each packet to allow the receiver(s) to synchronise their bit recovery clocks.

The cable also carries VBUS and GND wires on each segment to deliver power to devices. VBUS is nominally +5 V at the source. The USB allows cable segments of variable lengths, up to several meters, by choosing the appropriate conductor gauge to match the specified IR drop and other attributes such as device power budget and cable flexibility. In order to provide guaranteed input voltage levels and proper termination impedance, biased terminations are used at each end of the cable. The termination's also permits the detection of attach and detach at each port and differentiate between high/full-speed and low-speed devices.

All devices have an upstream connection. Upstream and downstream connectors are not mechanically interchangeable, thus eliminating illegal loopback connections at hubs. The cable has four conductors: a twisted signal pair of standard gauge and a power pair in a range of permitted gauges. The connector is four-position, with shielded housing, specified robustness, and ease of attach-detach characteristics.

NOTE:
Colortrac provides a 2m USB 2.0 cable as part of the accessories package. 2m is the MAXIMUM length we recommend. Any cables longer than the recommended 2m is at the customers' discretion, and Colortrac can not be help accountable for any failures during operation because of this.

9.2. EXTERNAL POWER SUPPLY

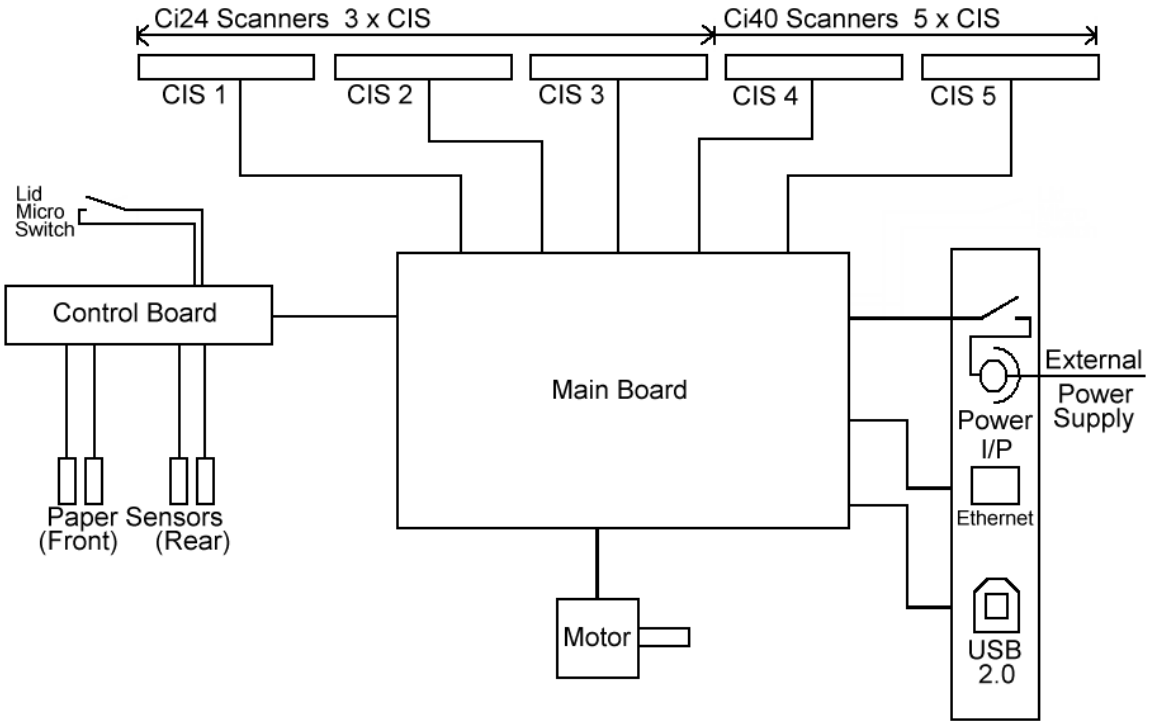
AC I/P 100 – 240V ~ 1.5A 50 – 60 Hz

DC O/P 19V ⎓ 3.42A

NOTE:
Only use the Ci scanner Power Supply Unit provided by Colortrac Ltd for operating the Ci scanner. The use of alternative power sources may be dangerous and will invalidate the scanner warranty.

10. SCANNER INFORMATION

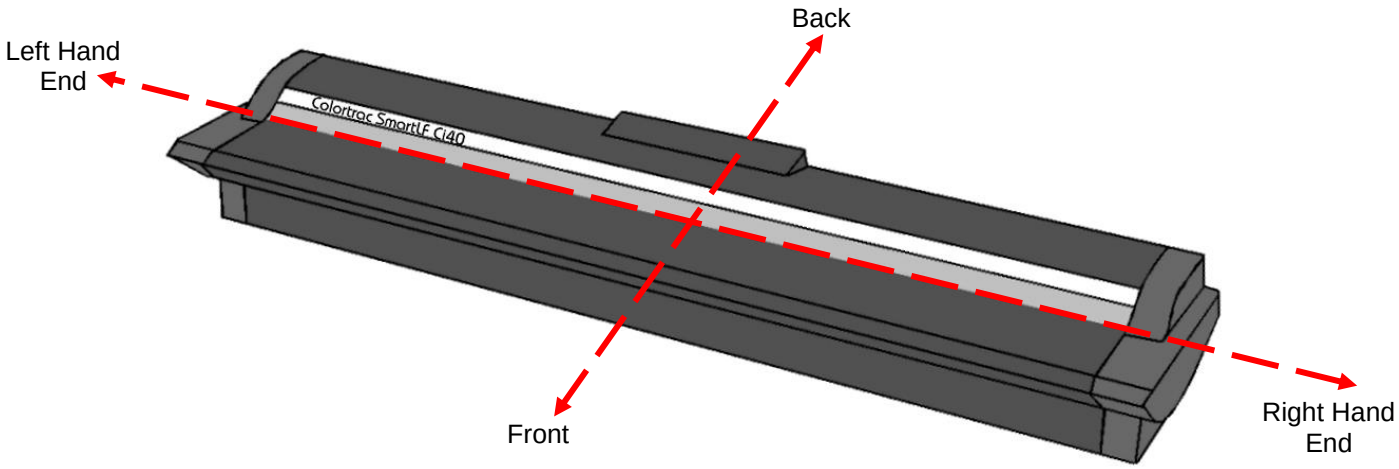
10.1. BLOCK DIAGRAM



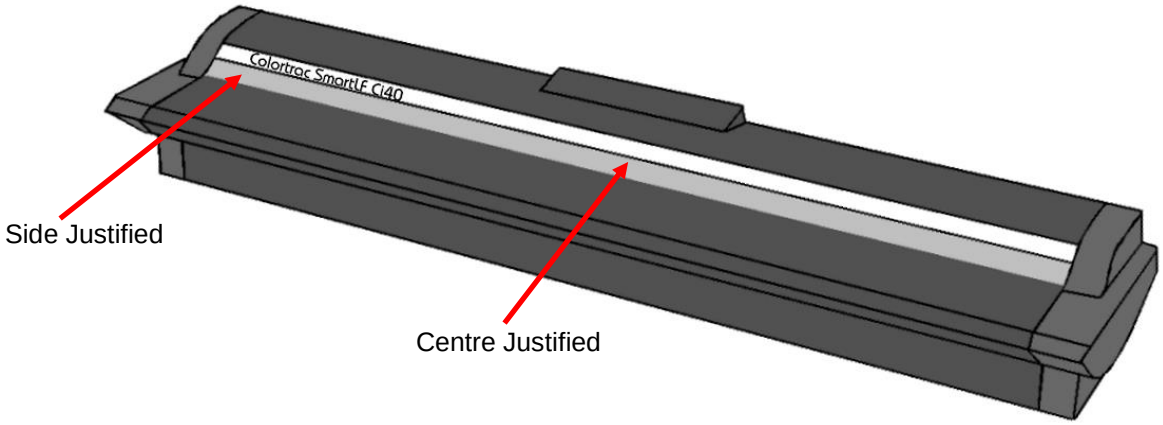
Consists of:

3 or 5 x CIS Arrays
4 x Paper Sensors
1 x USB Connector
1 x Stepper Motor
1 x Power I/P Connector
1 x Mains Switch
1 x Main Board
1 x Lid Cut Off Micro Switch
1 x Ethernet Connector
1 x Control / Display board

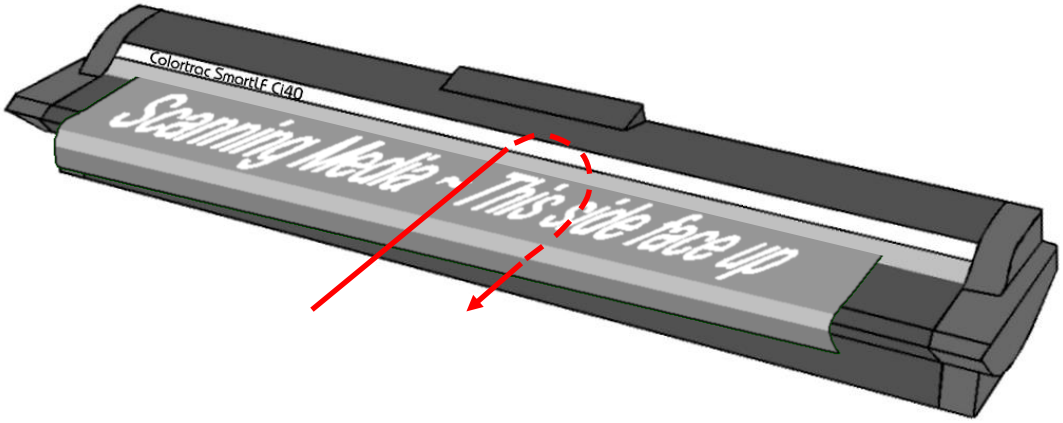
10.2. SCANNER OPERATION



For reference purposes, the diagram above shows the orientation of the scanner referred to in this manual.



The scanner has two justification options for scanning media: side justified and centre justified. Before scanning ensure the software is set to the correct preference and the media is inserted at the correct position as indicated on the Paper Tray Sub-A.



Insert Media FACE UP into the scanner

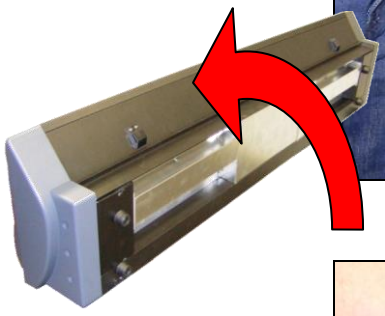
NOTE: The Ci40 image is shown for illustration purposes; orientations are true for both Ci24 and Ci40 scanners

10.3. SCANNER MAINTENANCE POSITION

1. Remove the 4 x M5 securing bolts that hold the scanner to the stand (if used)

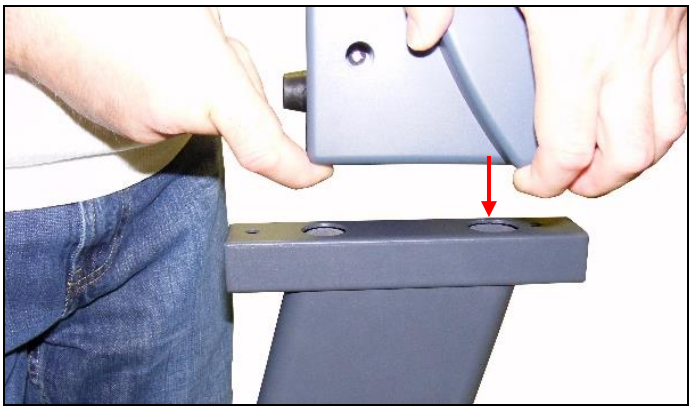
NOTE: Images in this chapter show the Ci24 scanner. Carry out the same procedure for the Ci40.

2. Lift the scanner from the stand and rotate onto its back. 2 people are required to lift the scanner.



3. Make sure the maintainence position foot on the back of the scanner lines up with the rear hole of the stand assembly.

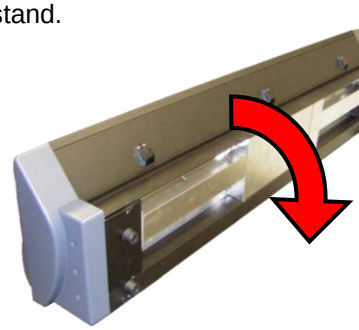
4. Lower onto the stand.



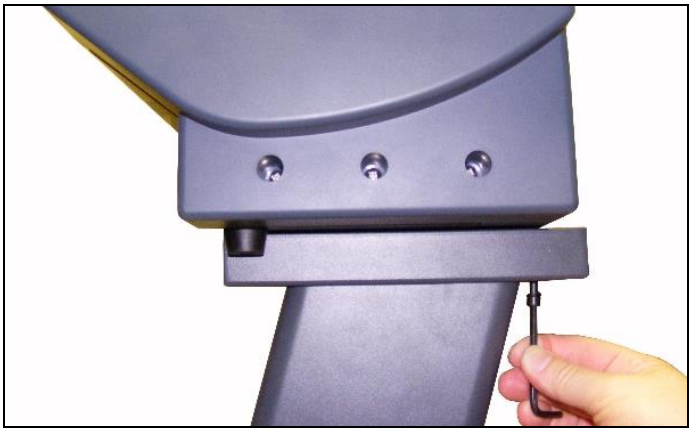
5. Screw 2 x M5 securing bolts through the stand into the scanner to prevent the scanner being pushed off the stand while in the maintainence poistion.

6. To return the scanner back to its operating position, first remove the 2 x M5 bolts securing it to the stand.

7. Lift and rotate the scanner back to it's normal position, locating the feet into the appropriate holes in the stand.



8. Refit the securing bolts in the scanner to prevent the scanner being pushed off the stand.



11. REMOVING AND REPLACING PANELLING

11.1. LEFT END COVER

11.1.1 Safety Precautions

- Ensure that the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on its Colortrac stand, or a stable maintenance platform.

11.1.2 Tools

- Medium pozi-drive screwdriver.

11.1.3 Associated Part Numbers

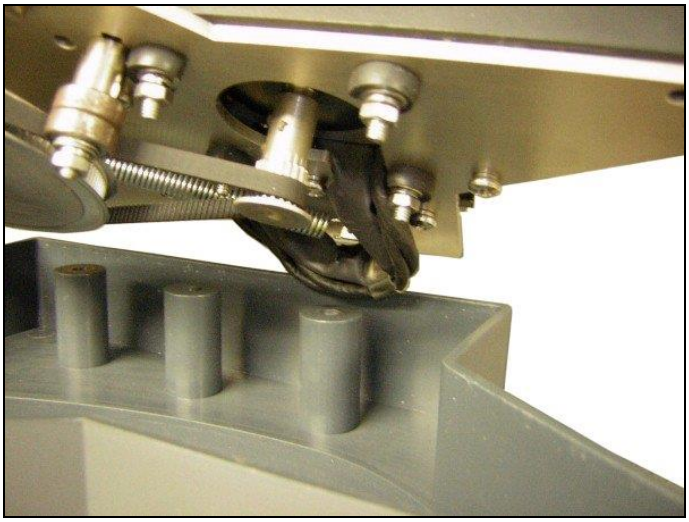
- P003138 Left End Cover

11.1.4 Procedure

1. Remove 5 x M5 Pan Head screws from cover side.

2. Gentle pull the end cover and remove it from the main assembly.

3. Before refitting the side panel make sure the wires and cables are not damaged or trapped.



4. Replace the 5 x M5 Pan Head screws and tighten.

11.2. RIGHT END COVER

11.2.1 Safety Precautions

- Ensure that the power is completely disconnected from the scanner unit.
  Ensure the scanner is positioned on its Colortrac stand, or a stable maintenance platform.

11.2.2 Tools

- Small pozi-drive screwdriver.
- Medium pozi-drive screwdriver.

11.2.3 Associated Part Numbers

- P003128 Right End Cover

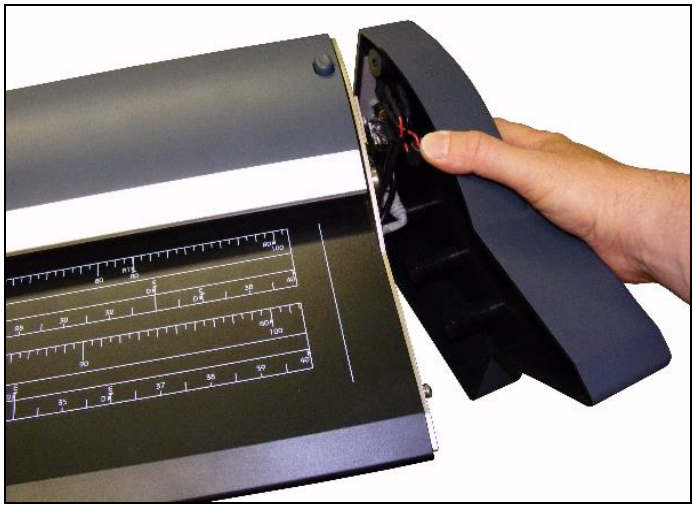
11.2.4 Procedure

1. Remove the 4 x M3 CSK screws holding the connector panel to the end cover.

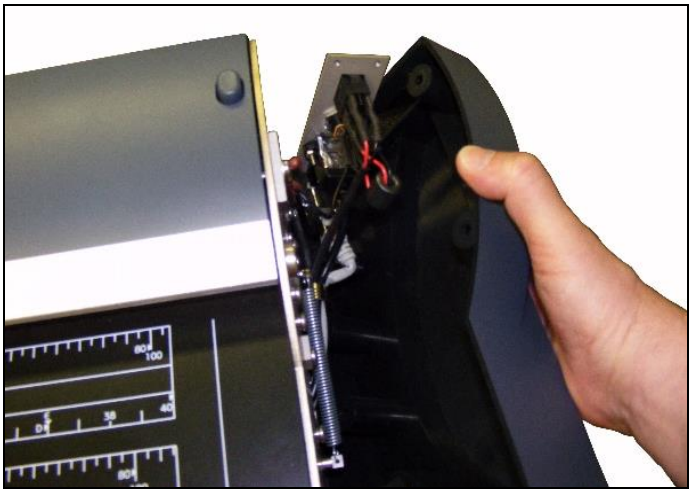
2. Remove the 5 x M5 Pan Head Screws from end cover.

Caution: Wires and cables are connected to the connector panel of the Right end cover. Sharp or forceful movements may damage connected cables.

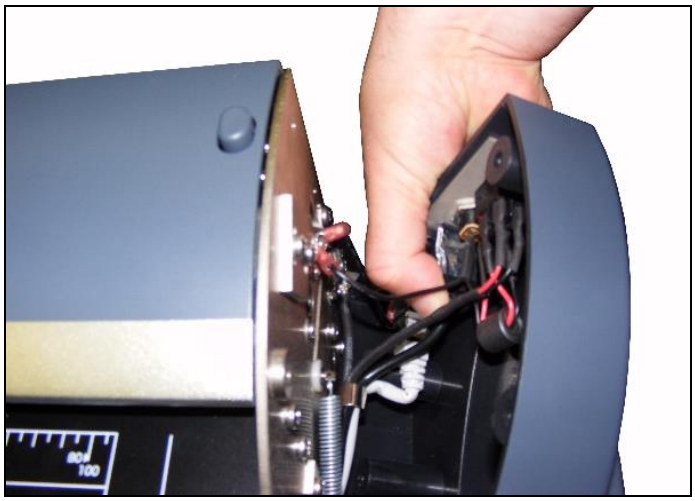
3. Slowly pull the end cover away from the chassis. Ensure that the Right end cover remains supported and is not allowed to hang suspended by the connected wires.



4. Remove the connector panel from the end cover and place cover in a safe place until needed.

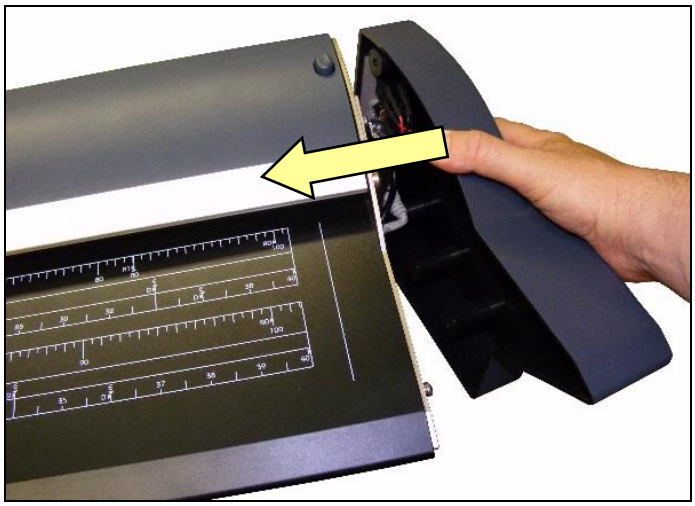


5. Reposition the connector panel, making sure the power switch is at the top of the end cover, and hold in place.



6. Replace the 4 x M3 CSK screws to hold the connector panel in the end cover.

7. Replace the end cover on to the chassis.



8. Replace the 5 x M5 Pan Head Screws and tighten.

11.3. LID COVER EXTRUSION SUB-A

11.3.1 Safety Precautions

- Ensure that the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on its Colortrac stand, or a stable maintenance platform.

11.3.2 Tools

- Medium Pozi-drive screwdriver
- Medium Stubby Pozi-drive screwdriver

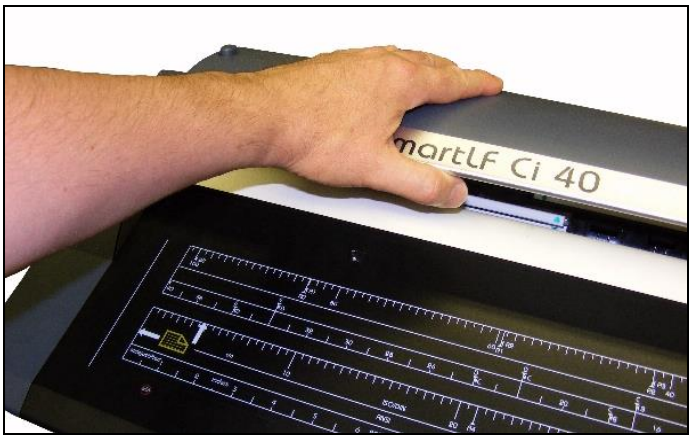
11.3.3 Associated Part Numbers

- P003273 Ci40 Lid Cover Extrusion Sub-A
- P003525 Ci24 Lid Cover Extrusion Sub-A

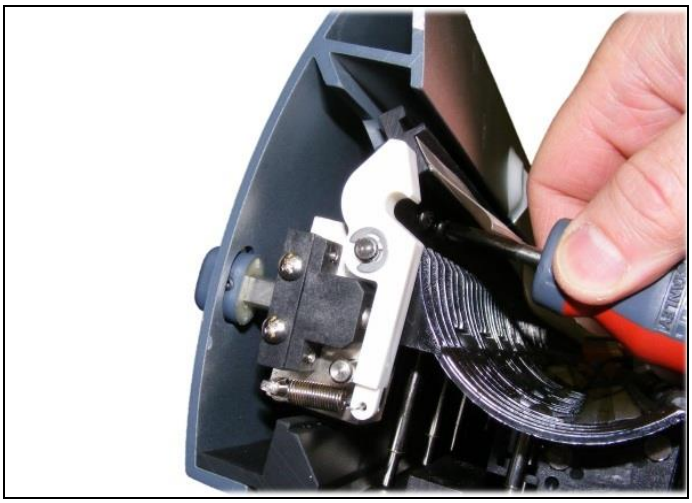
11.3.4 Procedure

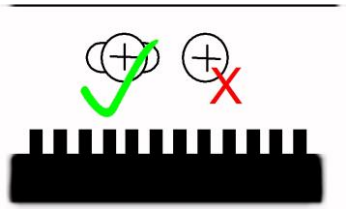
1. Press down on the locking buttons on both ends of the scanner lid unit.

2. Open the lid unit right back.



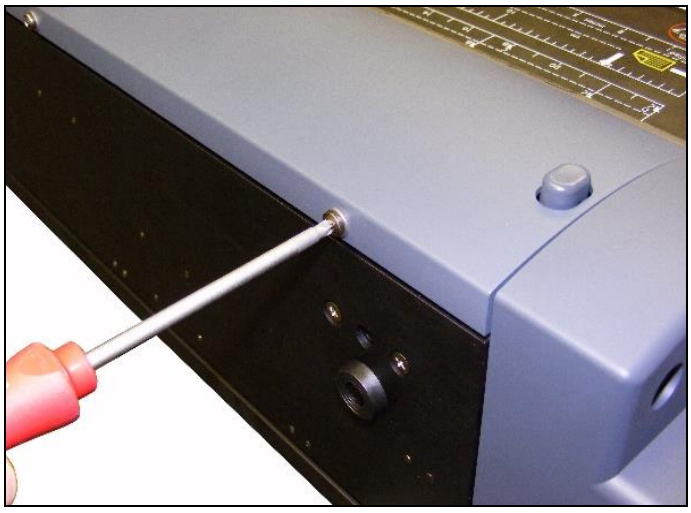
3. Under the Mylar strip, remove the 4 x M4 Pan Head Screws from the elongated hole that screws on the Lid Cover Extrusion Sub-A. The second, adjacent screw adjusts the height of the lid (see instructions 9 -11).*





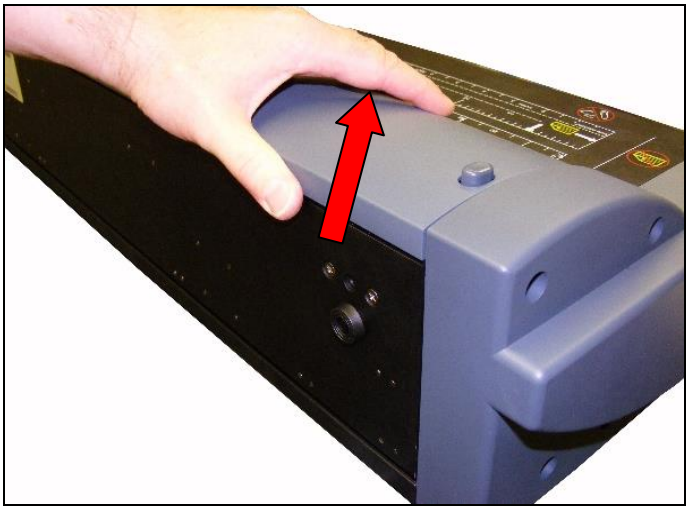
NOTE: The Mylar strip should not be removed to get to the screws. While bending the Mylar back to remove the screw, care is to be taken not to crease or damage the Mylar. Should it be creased or damaged the Mylar strip should be replaced.

4. Close the lid unit and remove the 5 x M4 Pan Head Screws from the back of the Lid Cover Extrusion Sub-A.

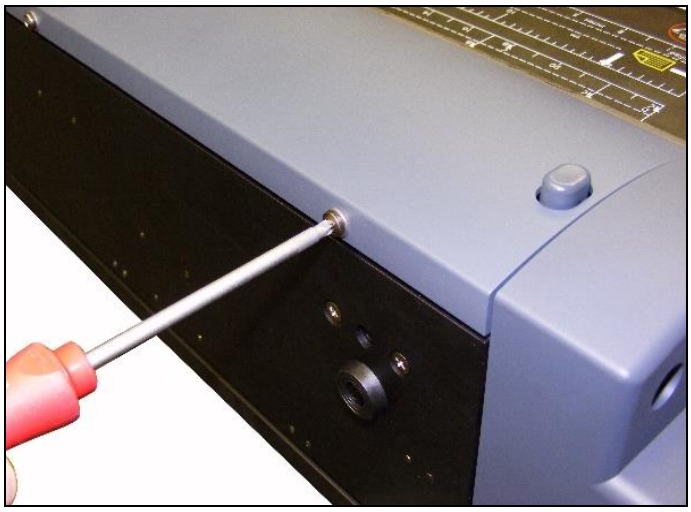


*Older scanners may not have the 2 sets of screws, and only have the M4 screws holding the lid on. However, removing the lid is the same method.

5. Remove the Lid Cover Extrusion Sub-A and store in a safe place.

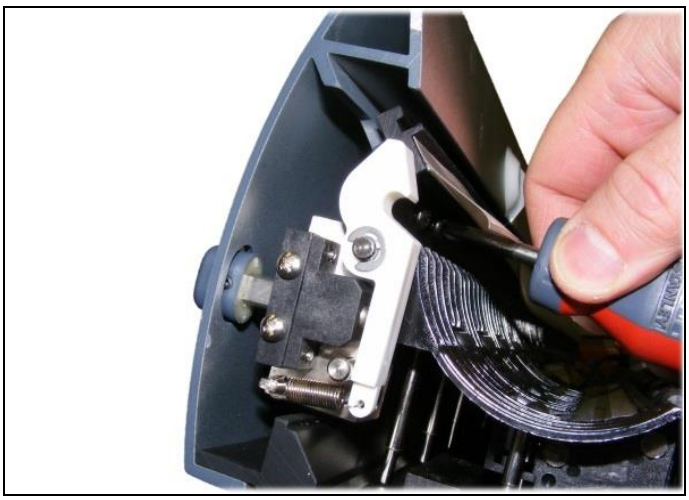


6. Refit the Lid Cover Extrusion Sub-A on top of the lid unit, and replace the 5 x M4 Pan Head screws.

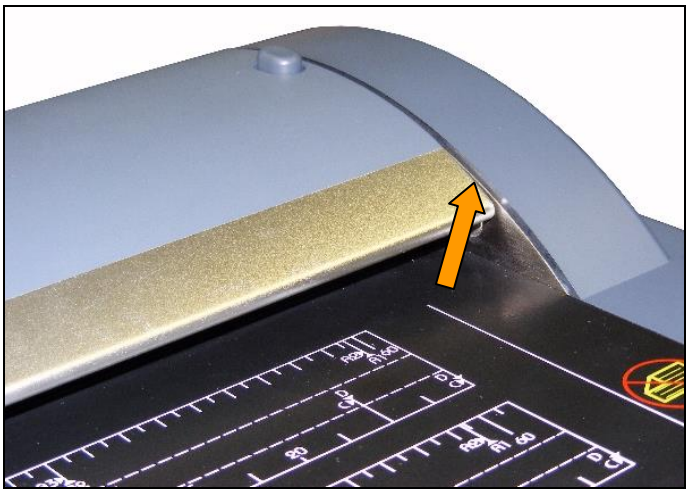


7. Press the locking buttons and open the lid unit.

8. Replace the 4 x M4 Pan Head screws under the Mylar strip. Being careful not to damage the Mylar strip as you feed the screwdriver underneath it.

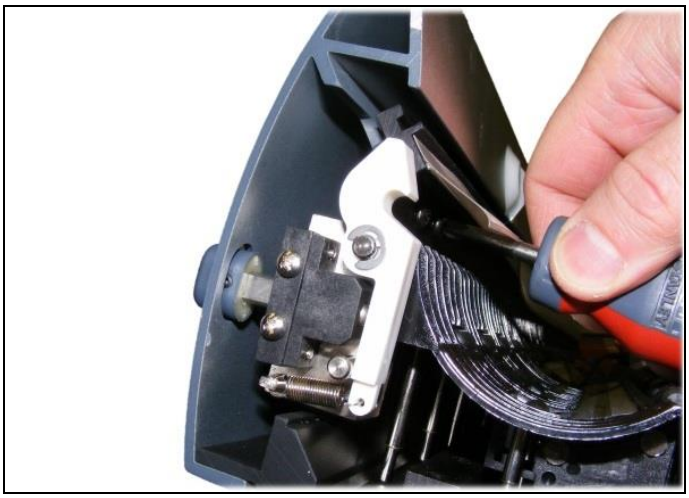


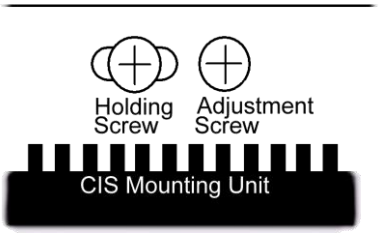
9. Close the lid unit. If the Lid Cover Extrusion Sub-A does not line up with the end cover, open the lid unit again and adjust the second set of screws to raise the lid cover.



10. To raise the Lid Cover Extrusion Sub-A, loosen the 4 x holding screws (in the elongated holes). Then tighten the adjust screw next to it to push the lid further away from the lid unit. Tighten the holding screws again to lock the lid cover in place.

11. To lower the lid cover, loosen the adjustment screws, and tighten the holding screws.





11.4. PCB TRAY

11.4.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.
- Use 2 persons to lift the scanner and rotate the scanner.

11.4.2 Tools

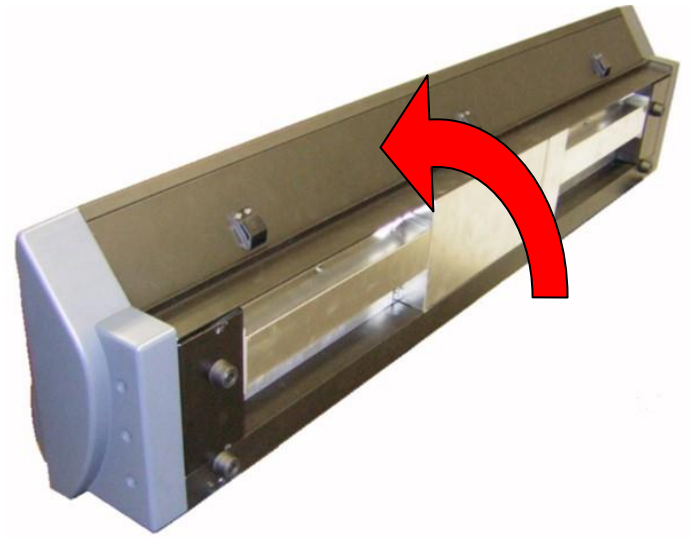
Medium Pozi-drive screwdriver.

11.4.3 Associated Part Numbers

- P003322 Ci40 PCB Tray Sub-A
- P003329 Ci40 Cable Tray Right Sub-A
- P003505 Ci24 PCB Tray Sub-A

11.4.4 Procedure

1. Ensure the scanner is positioned on its stand using the maintenance position as described in chapter 10.3 “Scanner Maintenance Position”

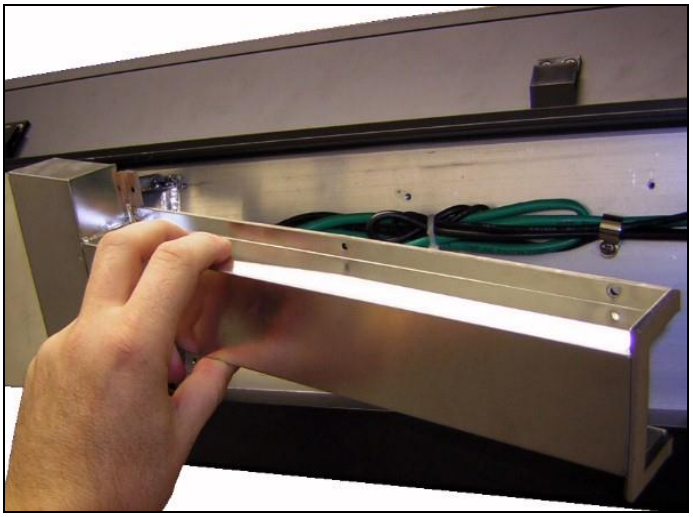


For Ci40, follow instruction 2 – 17 + instruction 26.
For Ci24, follow instructions 18 - 26.

Ci40

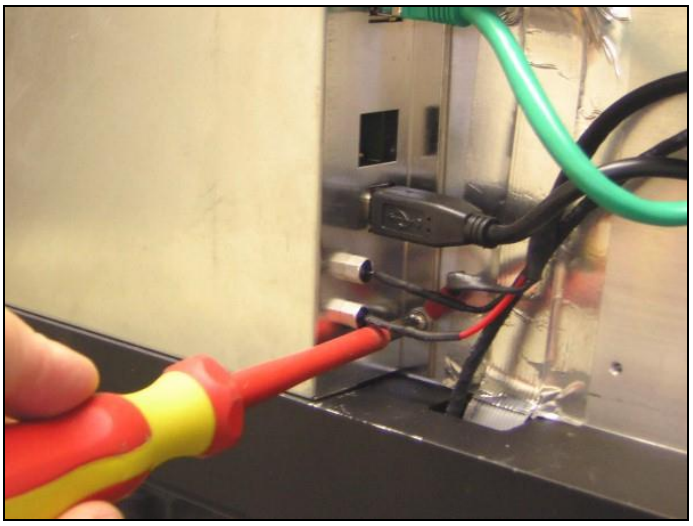
2. Remove 6 x M3 Pan Head Screws from the Cable Tray Right Sub-A.

3. Pull the Cable Tray Right Sub-A away from the chassis.



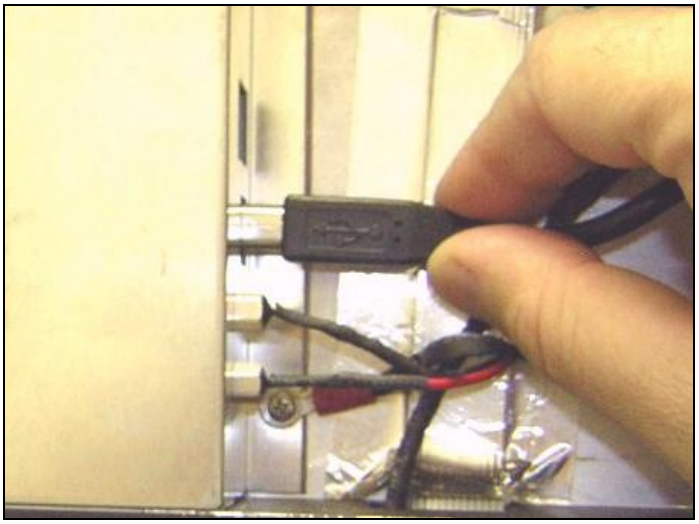
4. Remove the 4 x M3 pan head screws from the PCB Tray covering the Main Board.

NOTE: The bottom right hand corner screw acts as an earth point.



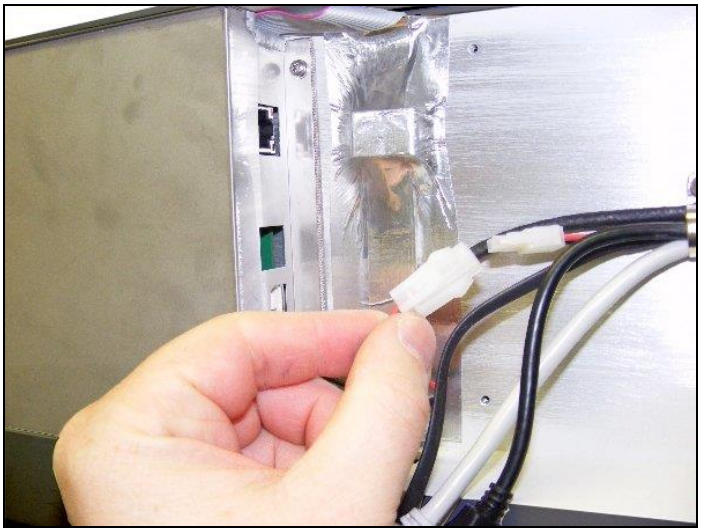
5. Disconnect the Ethernet connection to the board to allow the PCB Tray to come off.

6. Disconnect the USB connection to the board to allow the PCB Tray to come off.

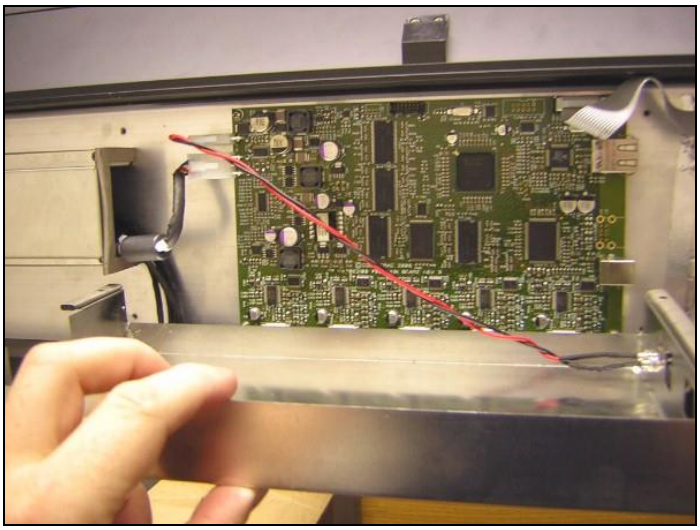


7. Disconnect the inline connector of the mains cable.

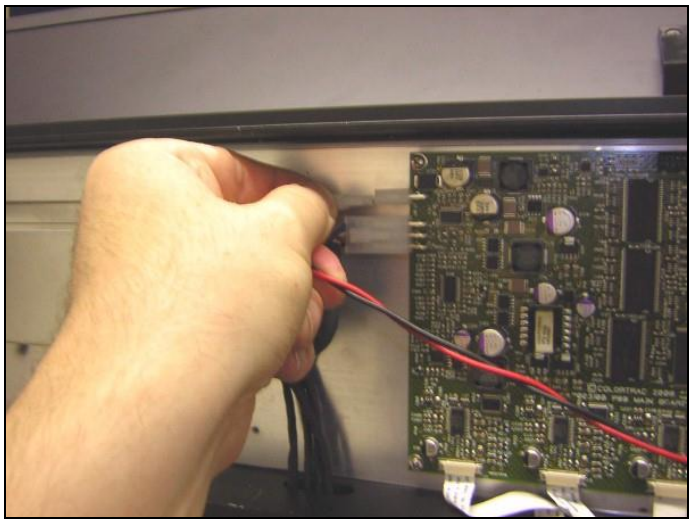
NOTE: These cables go through the cover with suppressors, the wires are hard soldered on, and can be easily broken off, and so great care is needed when handling this cable. A soldering iron is required to change the suppressors, so it is recommended the PCB Tray is replaced should these break in the field.



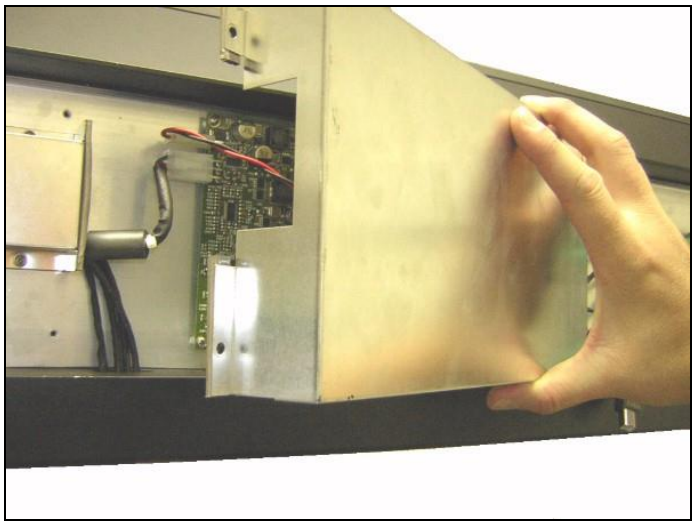
8. Pull out the PCB Tray and lower enough to be able to reach the mains connector to the board without putting strain on the cable.



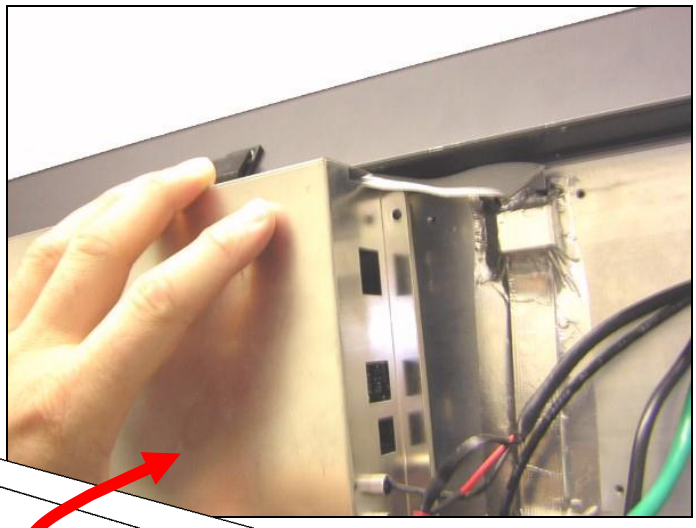
9. Disconnect the mains plug from the Main Board and remove the PCB Tray.

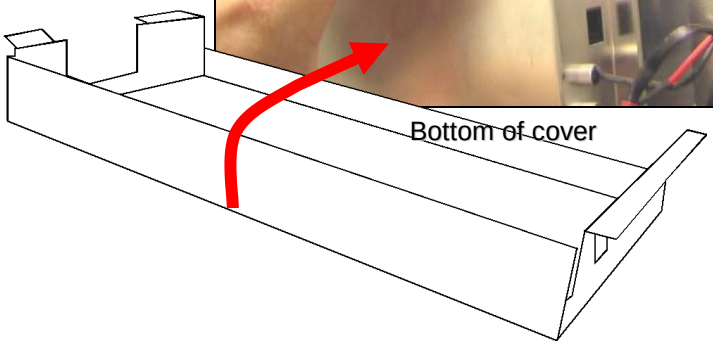


10. To refit the PCB Tray, hold the PCB Tray up in position; reconnect the main connector onto the main board, making sure it latches in place.

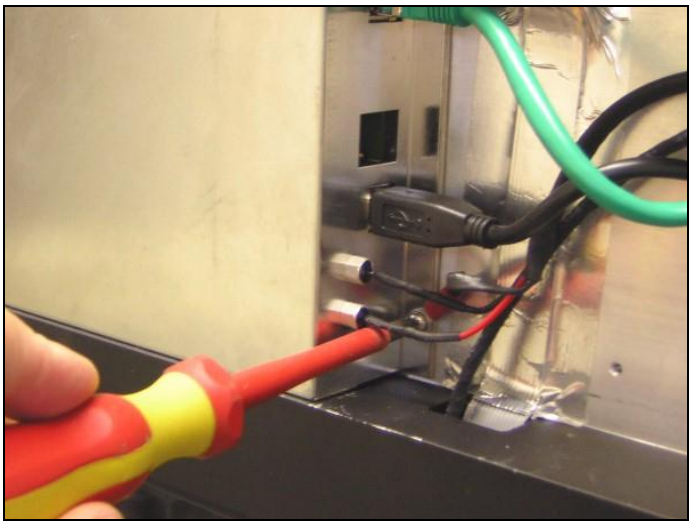


11. Refit the PCB Tray by making sure that all the fitted cables are out of the way of any edges of the cover. Feed the large ribbon cable into the slot at the top of the PCB Tray, and make sure the bottom of the PCB Tray does not damage the CIS ribbon cables.

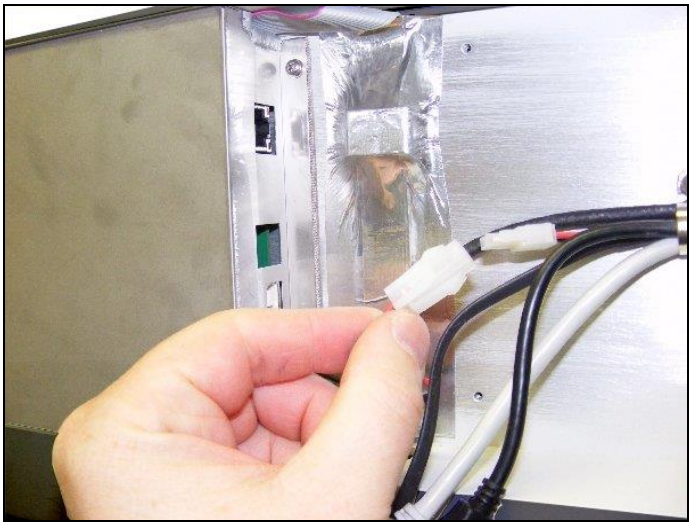




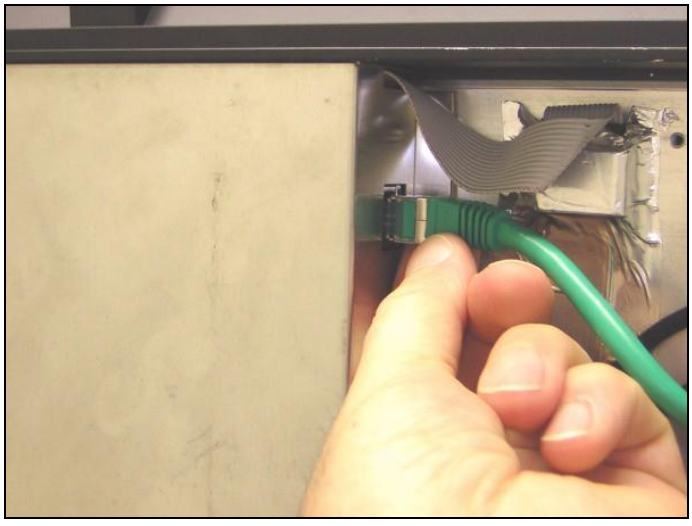
12. Replace the 4 x M3 pan head screw to hold the cover on, remembering to fit the earth lead to the bottom right hand screw.



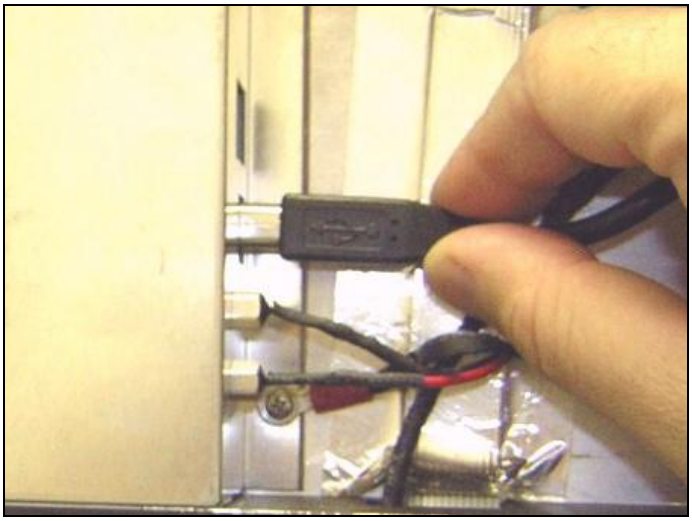
13. Reconnect the mains cable together, making sure the latch locks in place.



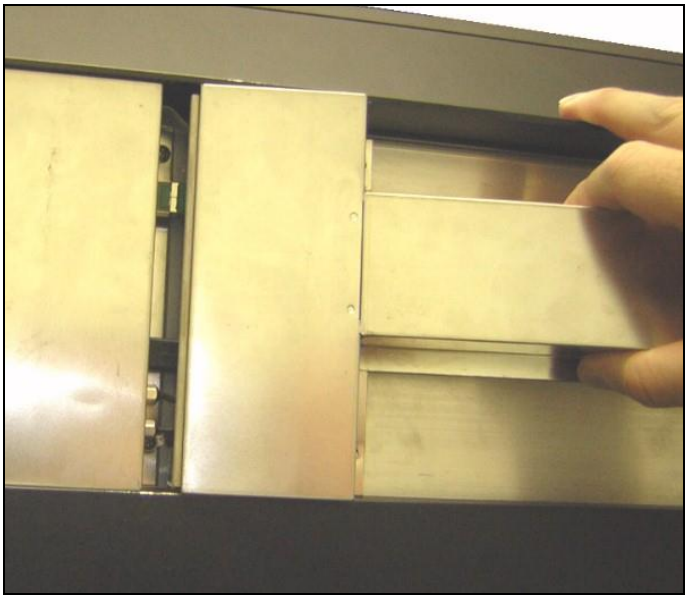
14. Reconnect the Ethernet connector, making sure it latches in place



15. Refit the USB connector, pressing fully in.



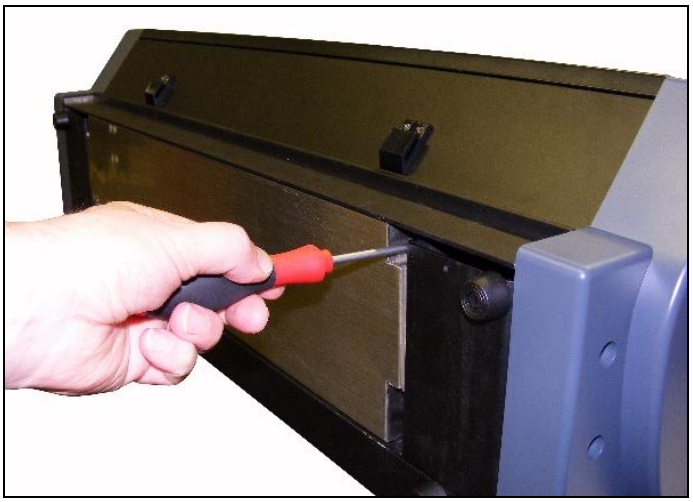
16. Replace the Cable Tray Right Sub-A, making sure the left hand end is fed on first. Make sure the ribbon cable is not caught on the metal tray when fitting.



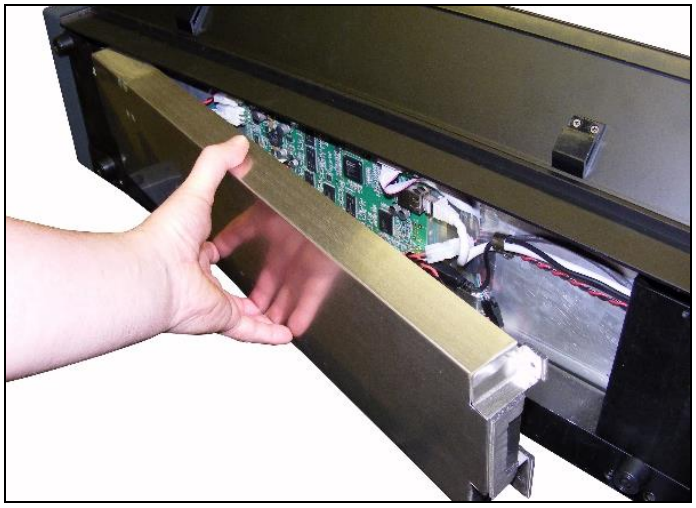
17. Refit the 6 x M3 pan head screw to hold the Cable Tray Right Sub-A in place. Make sure the screws are tight but not tight enough to deform the metal work.

Ci24

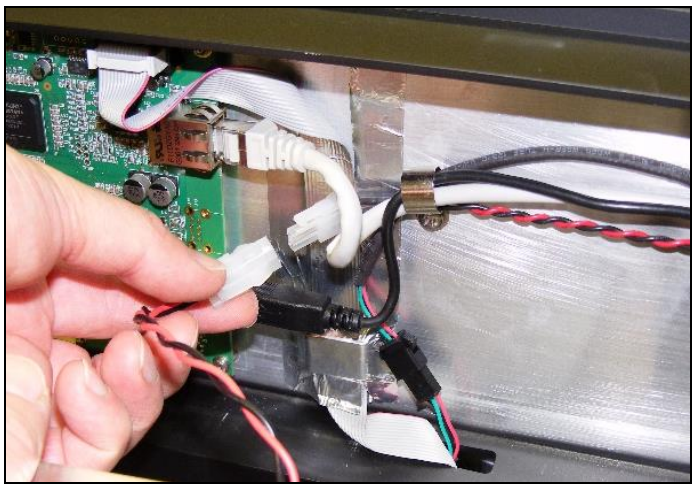
18. For the Ci24 PCB Tray, remove the 4 x M3 screws in each corner.



19. Pull the PCB tray out gently; remembering the power cable is connected to the tray.

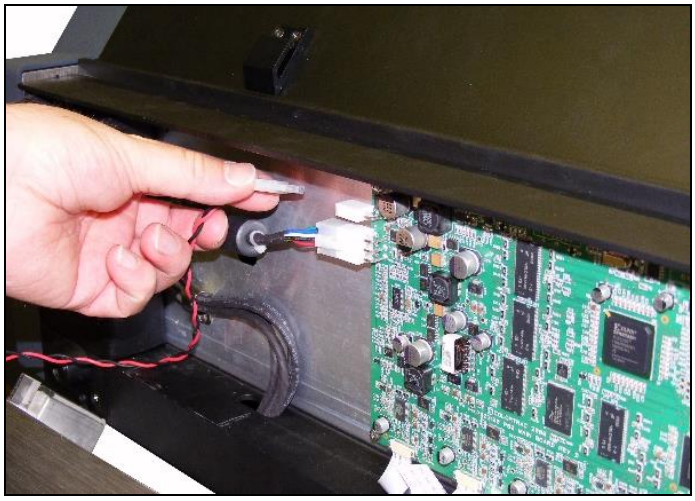


20. Disconnect the inline connector for the power cable.

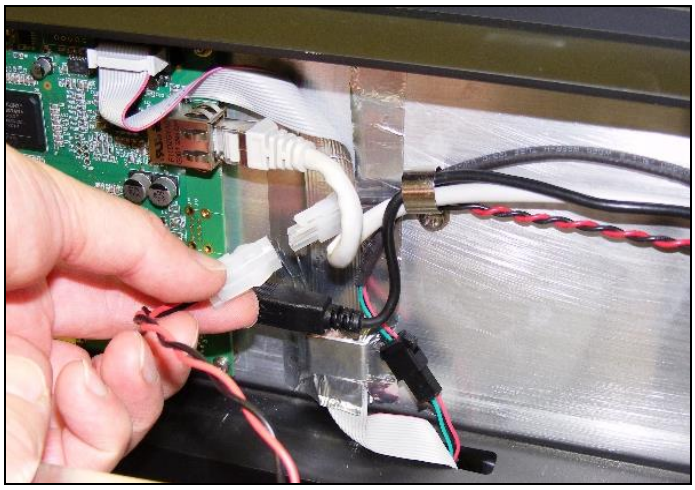


21. Disconnect the Power cable from the main board.

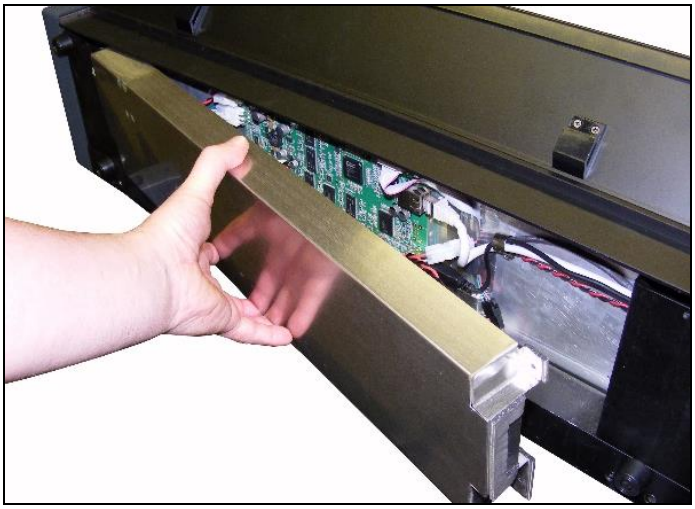
22. To refit the PCB Tray, reconnect the power cable into the main board.



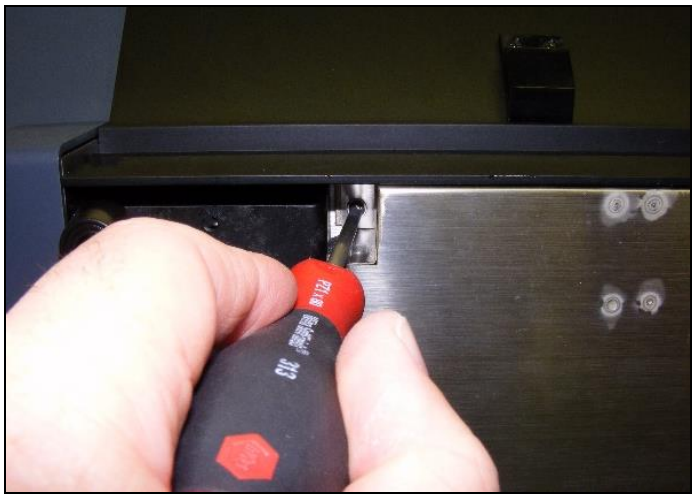
23. Reconnect the inline power cable connector.



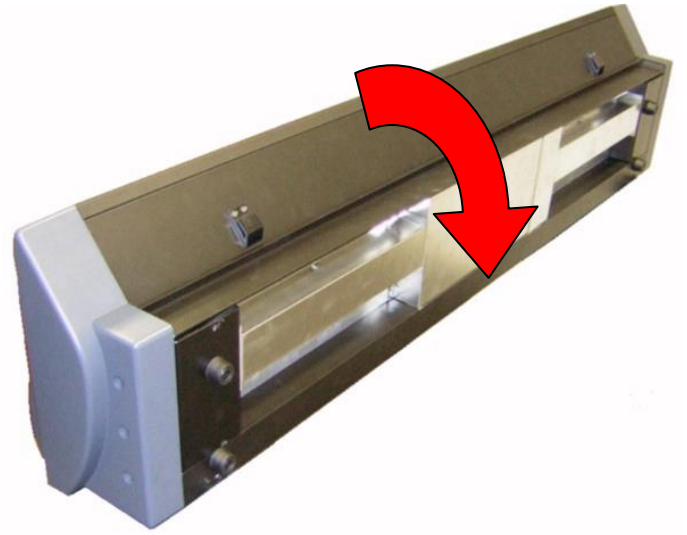
24. Reposition the PCB Tray, making sure that none of the cables are damaged or in the way.



25. Replace the 4 x M3 screws in each corner of the PCB Tray.



26. Rotate the scanner back into position on the stand as described in chapter 10.3 “Scanner Maintenance Position”.



11.5. PAPER TRAY SUB-A

11.5.1 Safety Precautions

- Before undertaking this procedure ensure that power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on its Colortrac stand, or a stable maintenance platform.

11.5.2 Tools

Small pozi-drive screwdriver.

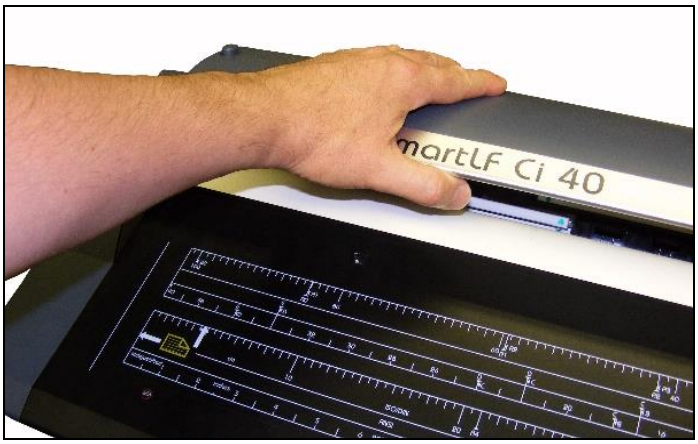
11.5.3 Associated Part Numbers

- P003355 Ci40 Paper Tray Sub-A (non-magnetic)
- P003506 Ci24 Paper Tray Sub-A (non-magnetic)
- P003812 Ci24 Paper Tray Sub-A (magnetic)
- P003813 Ci40 Paper Tray Sub-A (magnetic)

11.5.4 Procedures

1. Press down on the locking buttons on both ends of the lid unit.

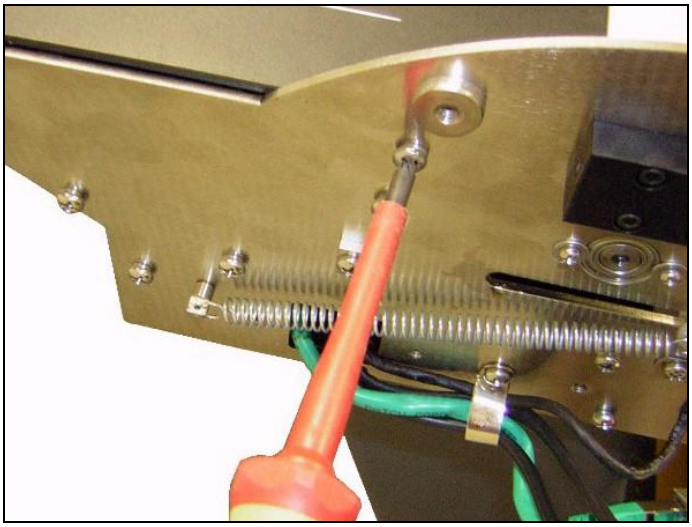
2. Open the lid unit right back.



3. Remove the left end cover as in Chapter 11.1.

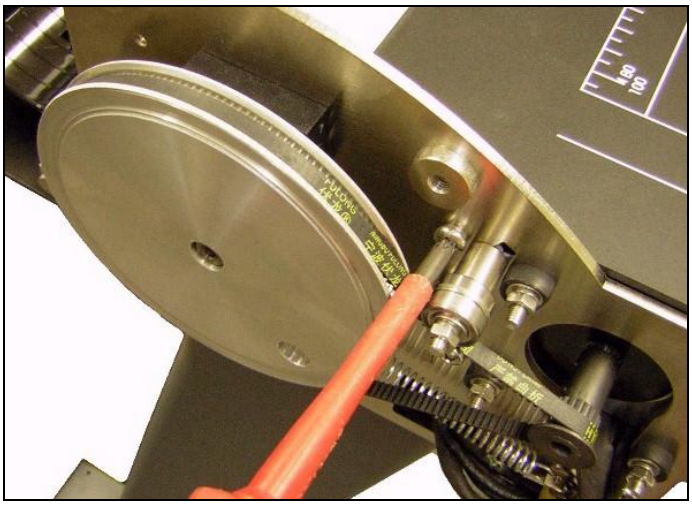
4. Remove the right end cover' as in Chapter 11.2.

5. Remove 2 x Pan Head screws from the right end plate.



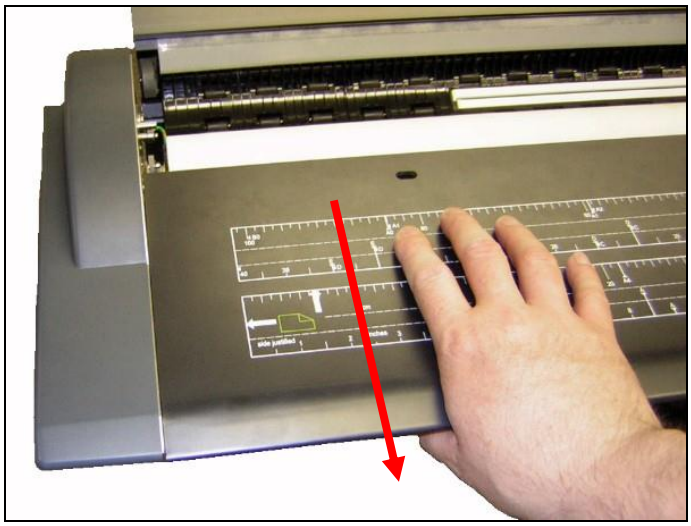
6. Remove 2 x Pan Head screws from the left end plate.

Note: It may be necessary to loosen the belt tension bar to remove the Pan head screw nearest it. To do this, follow the instructions at Chapter 12.1 'Main Timing Belt'.



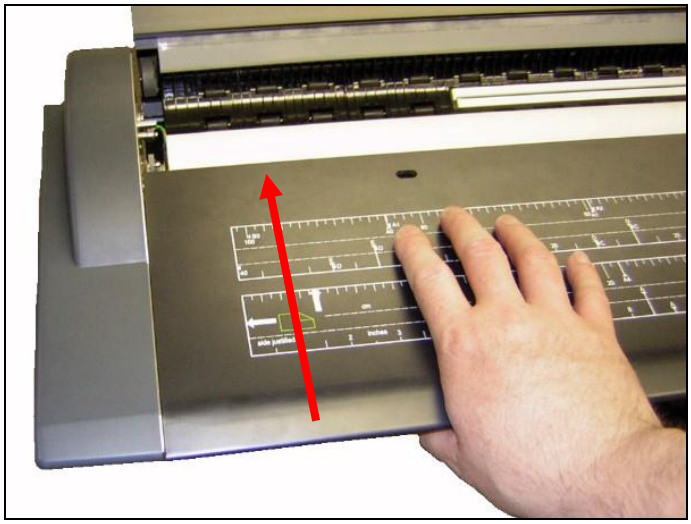
7. Pull the Paper Tray Sub-A towards the front to free the paper it from the chassis.

NOTE: It may be necessary to remove the magnetic paper guide from the paper tray first, if it is fitted.

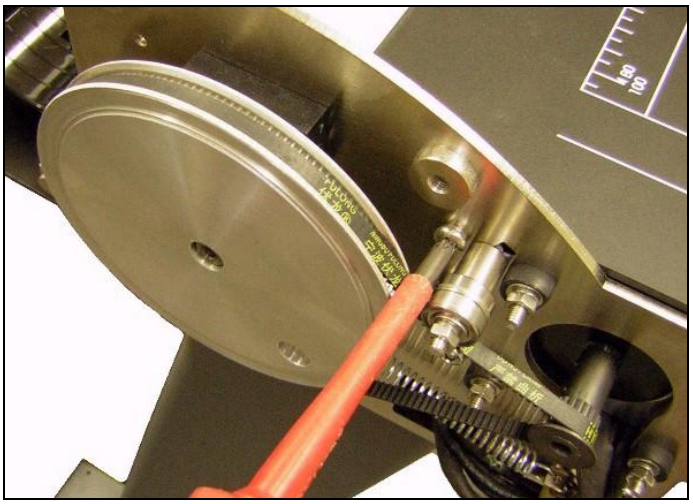


8. Lift the Paper Tray Sub-A off the scanner and store in a safe place.

9. To refit the Paper Tray Sub-A place it into the front of the scanner, with the front of the tray over hanging the scanner by 1". Then slide the Paper Tray Sub-A back into position.

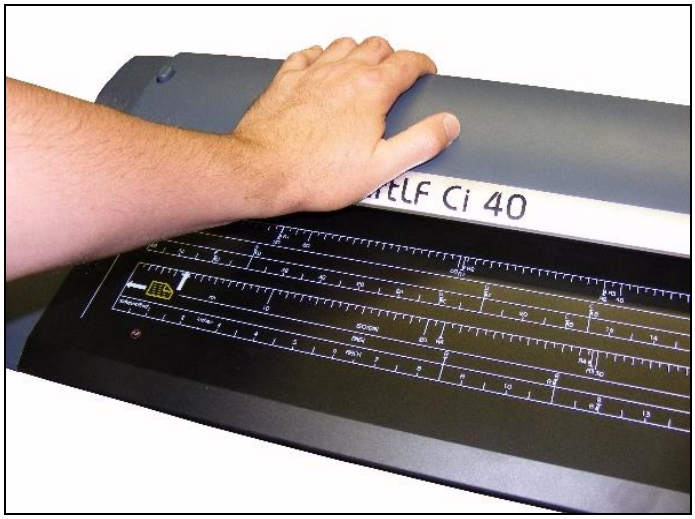


10. Replace the 4 x M4 Pan Head screws on either end of the scanner. It may be necessary to re-tension the belt if it has been moved. To do this, follow the instructions in Chapter 12.1, 'Main Timing Belt'.



11. Refit the left end cover as in Chapter 11.1 'Left End Cover'.
12. Refit the right end cover as in Chapter 11.2 ‘Right End Cover’

13. Close the Lid Unit.



12. REMOVING AND REPLACING COMPONENTS

12.1. MAIN TIMING BELT

12.1.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.

12.1.2 Tools

7mm Nutdriver.

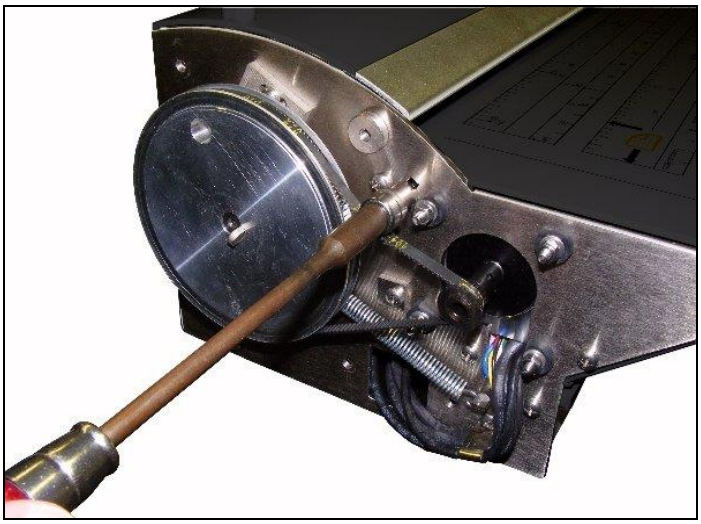
12.1.3 Associated Part Numbers

- P003151 Main Timing Belt

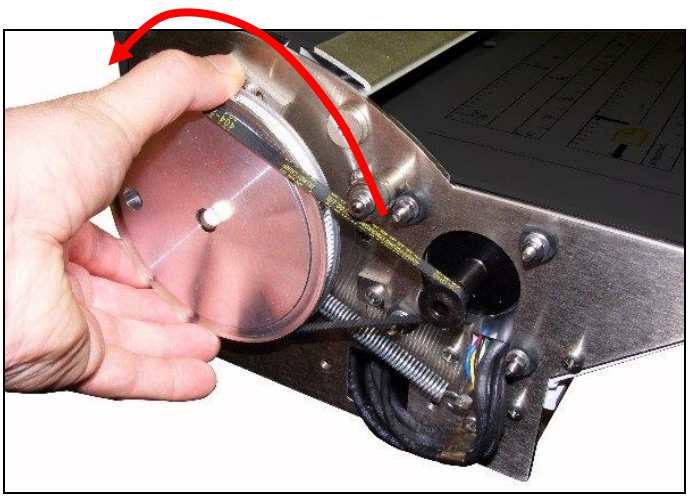
12.1.4 Procedures

1. Remove left end cover as in Chapter 11.1.

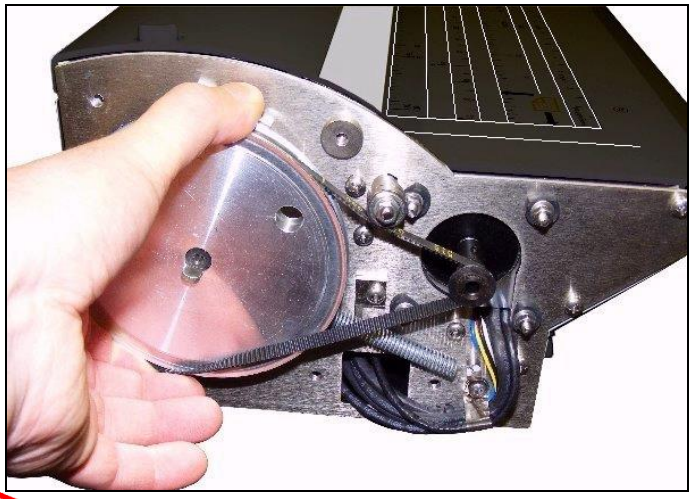
2. Loosen the locking nut on the tension bar. Do not allow the nut to come completely off the end, as the tension bar will fall back inside the chassis.

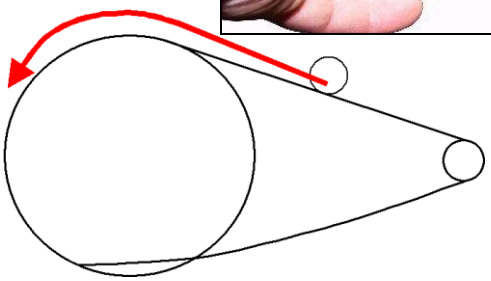


3. Pull the belt over the lip of the roller pulley as much as possible and rotate the roller pulley anti-clockwise until the belt comes off completely.



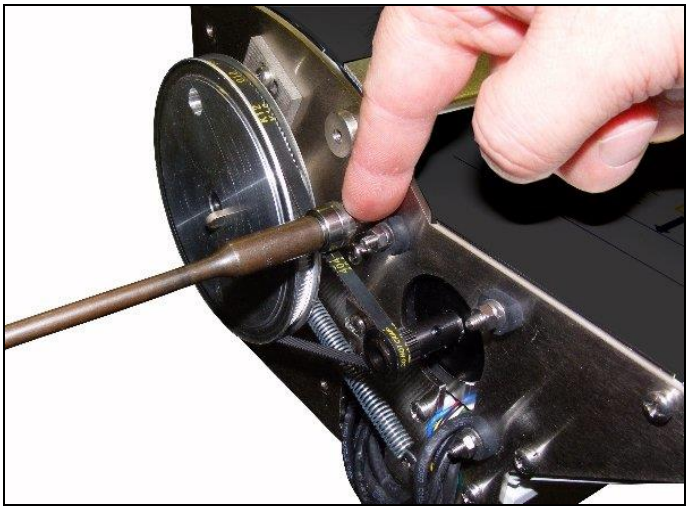
4. To replace the timing belt loop the replacement belt over the motor pulley first and feed the belt over the top of the roller pulley. Make sure the belt goes under the tension bar while doing this. Turn the pulley anti-clockwise until the belt is fully on.





5. Using one finger, apply pressure on the tension bar to remove any slack in the belt. Tighten the nut on the end of the tension bar to lock it to position. Do not over tighten the nut as this may damage the thread on the tension bar and will need replacing.

NOTE: The tension of the belt is to stop the teeth of the belt from slipping over the teeth of the pulleys. Do not make the tension too tight.



6. Replace the Left end cover as in Chapter 11.1.

12.2. MYLAR PAPER GUIDE SUB-A

12.2.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.

12.2.2 Tools

- None

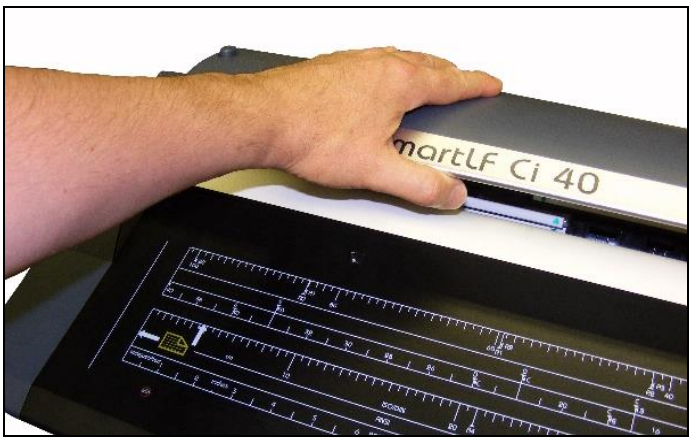
12.2.3 Associated Part Numbers

- P003365 Ci40 Mylar Paper Guide Sub-A
- P003510 Ci24 Mylar Paper Guide Sub-A

12.2.4 Procedures

1. Press down on the locking buttons on both ends of the scanner lid unit.

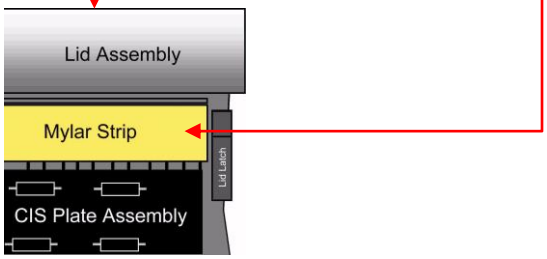
2. Open the lid unit right back.



3. Hold on to the Mylar Paper Guide Sub-A and pull completely off from the Lid Assembly.

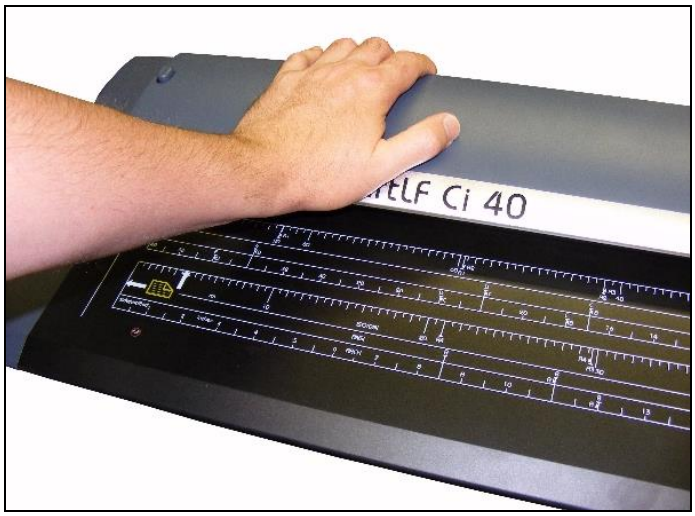
4. Peal the backing off the tape from the replacement Mylar strip. Only peal it back by a few inches; do not fully remove the backing tape completely.

5. Position the Mylar strip to the lid assembly, so the edge of the Mylar is against the ridge of the lid assembly, and the end of the Mylar is level with the end of the lid assembly.



6. Peal all the backing tape off, and making sure the Mylar is hard against the ridge of the Lid Assembly, stick the Mylar fully in place. If the Mylar is longer that the lid, cut to length.

7. Close the Lid Unit.



12.3. ROLLER SHAFT PULLEY

12.3.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.

12.3.2 Tools

- Medium pozi-drive screwdriver

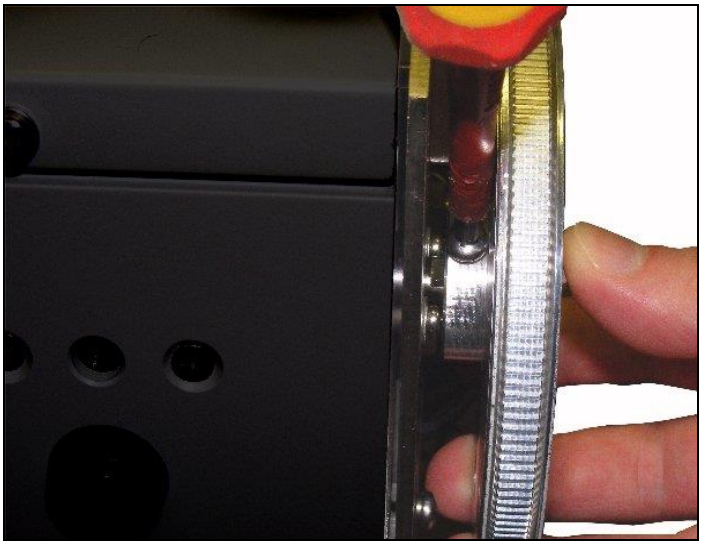
12.3.3 Associated Part Numbers

- P003319 Roller Shaft Pulley Sub-A
- P003151 Main Timing Belt

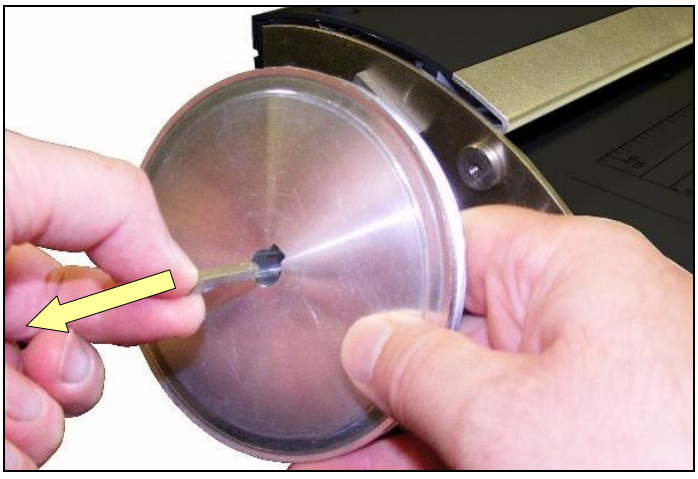
12.2.4 Procedures

1. Remove left end cover as in Chapter 11.1.

2. Remove Main Timing Belt as in Chapter 12.1 'Main Timing Belt'



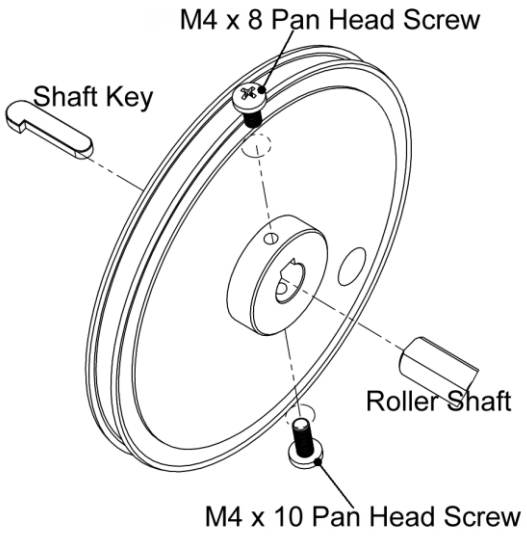
3. Loosen the 2 x M4 screws that are cramping the pulley to the roller shaft



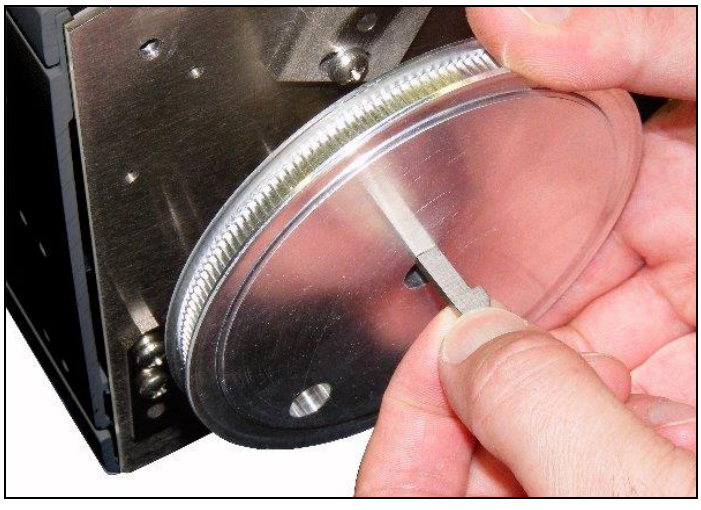
4. Pull the roller shaft pulley off from the roller shaft, making sure to remove and retain the shaft key ready for refit.

5. Before fitting the roller shaft pulley make sure the 2 x M4 screws are inserted but are not pretruding into the hole or cut out for the shaft key.

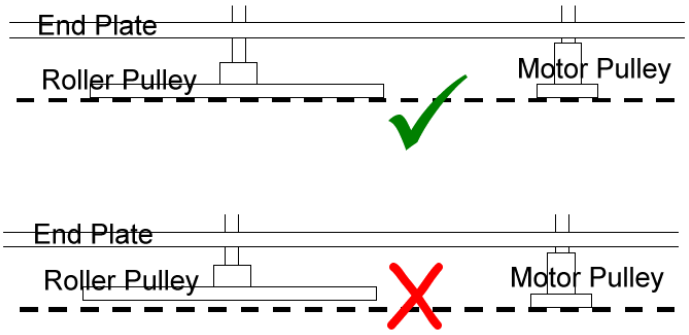
NOTE: The M4 x 8 screw goes into the hole at the shaft key cut out, and the M4 x 10 in the hole opposite the cut out. When the shaft key is fitted, insert it so the flat side is face up toward the screw.



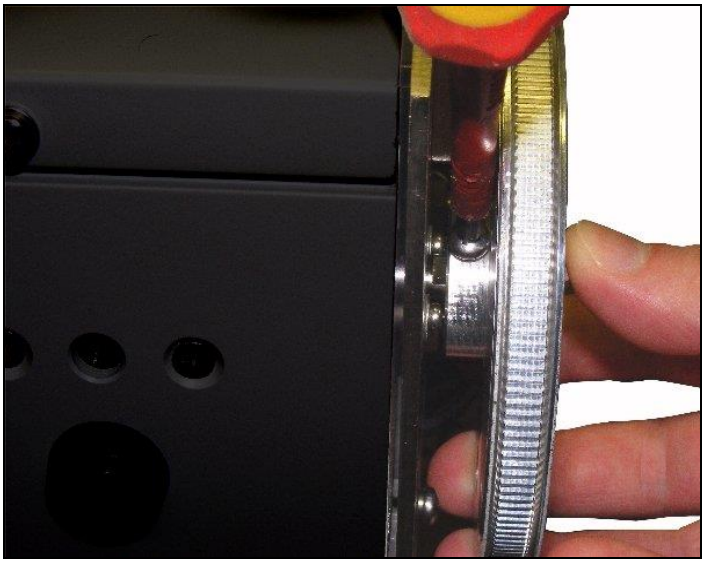
6. Insert the shaft key into place before fitting onto the shaft. Fit on the shaft so the shaft key goes over the flat area of the roller shaft.



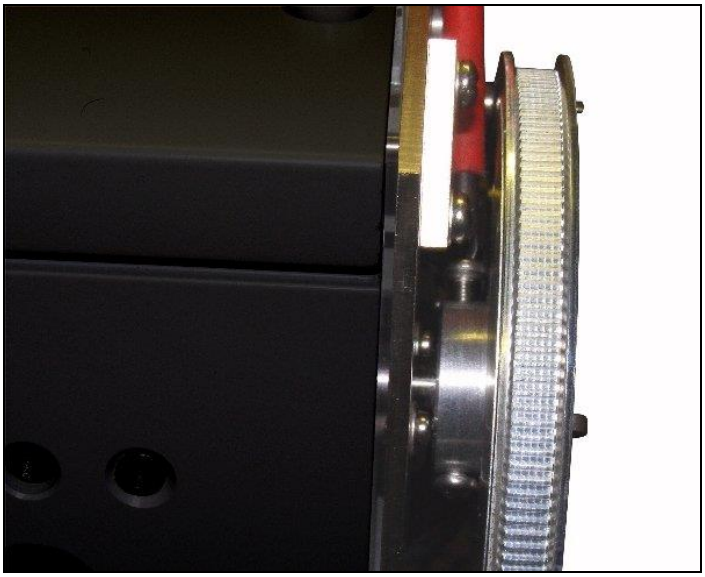
7. Push the roller pulley onto the shaft so the two pulleys are inline with each other. Pushing the roller too far onto the shaft will cause the pulley to move against the spring for the lid unit and cause a noise.



8. Tighten up the M4 x 8 screw to the shaft key as tight as it will go, making sure there is no excess movement of the pulley to the roller shaft.



9. Rotate the pulley and roller until you can get access to the M4 x 10 screw. Tighten this screw.



10. Replace the Main Timing Belt as in Chapter 12.1 'Main Timing Belt'

11. Replace the left end cover as in Chapter 11.1.

12.4. CONTROL BOARD

12.4.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.
- Employ static safety precautions when handling electronic boards and integrated circuits.

12.4.2 Tools

- Medium pozi-drive screwdriver.
  Small pozi-drive screwdriver.

12.4.3 Associated Part Numbers

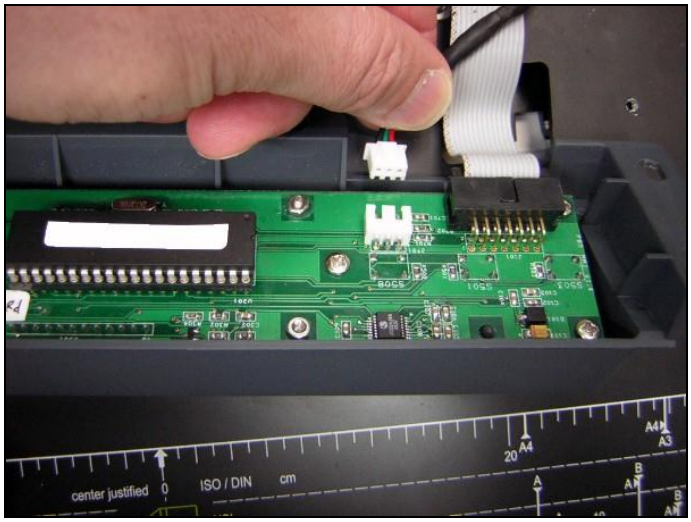
- P003320 Control Board
- P003302 Control Board Bracket

12.4.4 Procedures

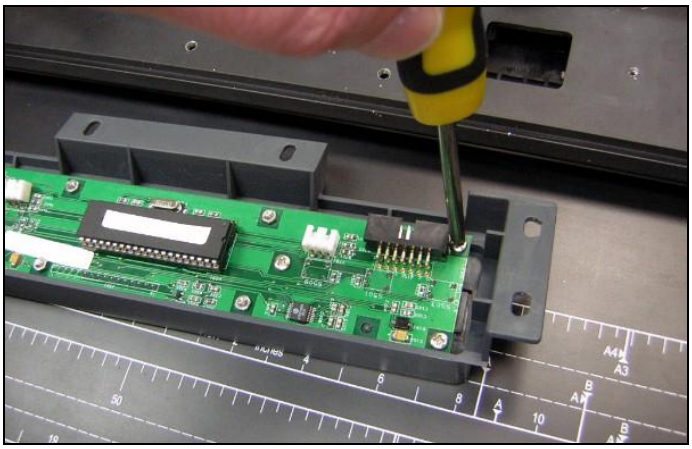
1. Remove the Lid Cover Extrusion Sub-A as in Chapter 11.3.

2. Remove the M3 Pan Head screws from the Control board bracket.

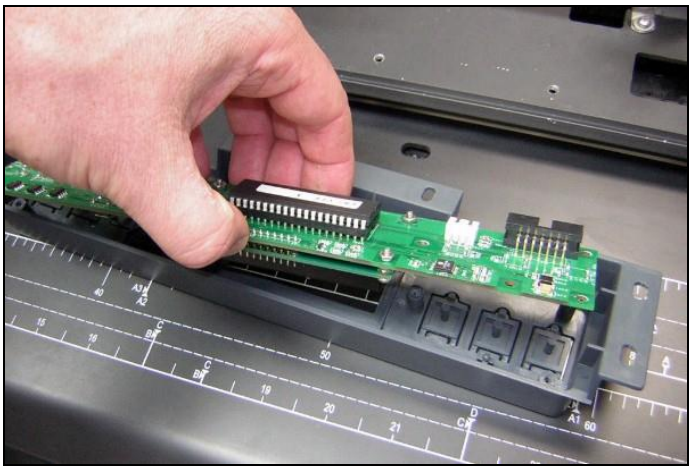
3. Lift and rotate the control board bracket upside down and disconnect all the cables. As the 4 connectors look identical on the left hand side, it is worth marking their positions to ensure they are positioned correctly during reassembly.



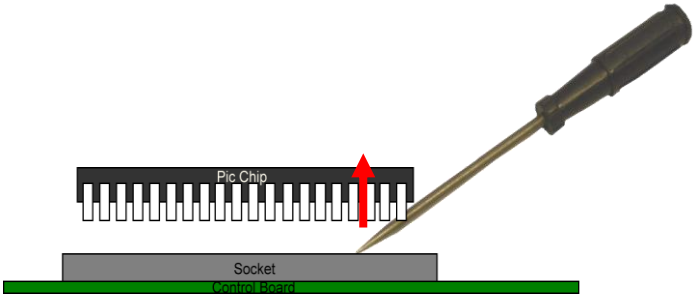
4. Remove the 6 x self-tapping screws holding the control board to the bracket.

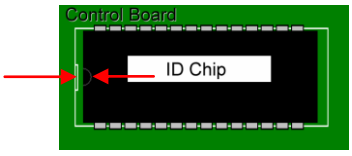


5. Remove the board from the bracket. If the control board is being replaced, the ID chip in the board must be removed and put into the replacement board first. The ID chip must stay with the scanner.

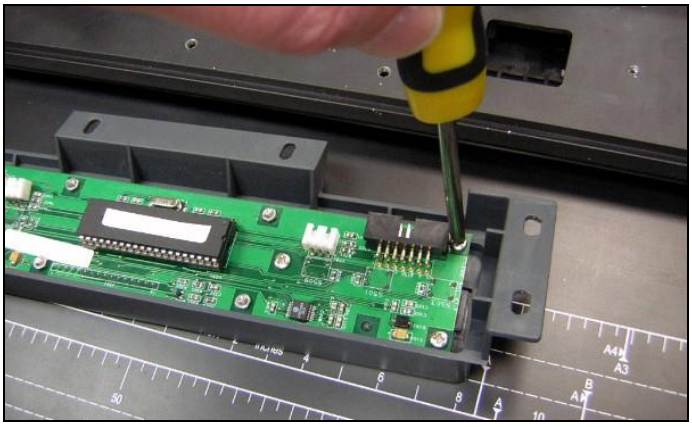


6. Use a small screwdriver to prise the ID chip out of the socket and fit the correct way round in the new control board.

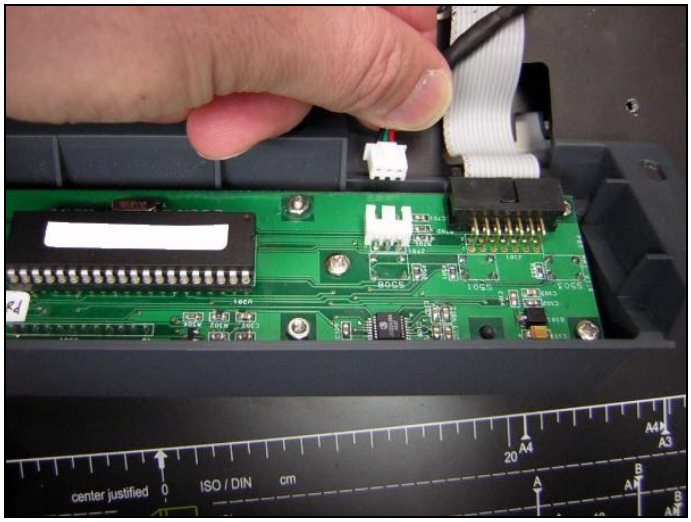




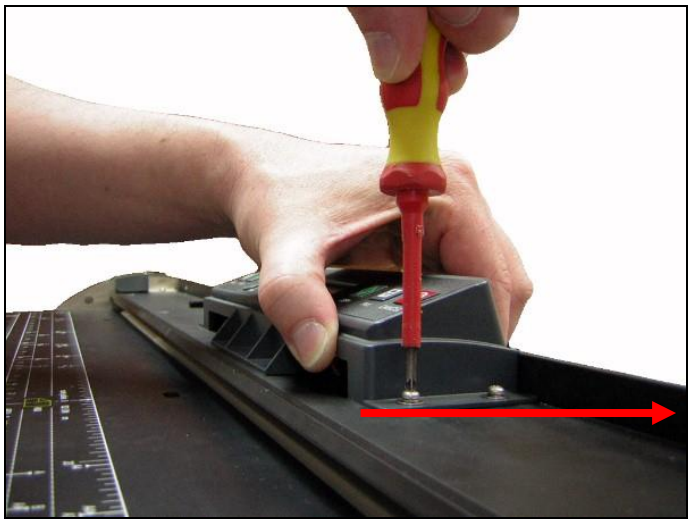
7. Refit the control board back into the bracket, making sure it is the correct way round, replace the 6 x Self-tapper screws.



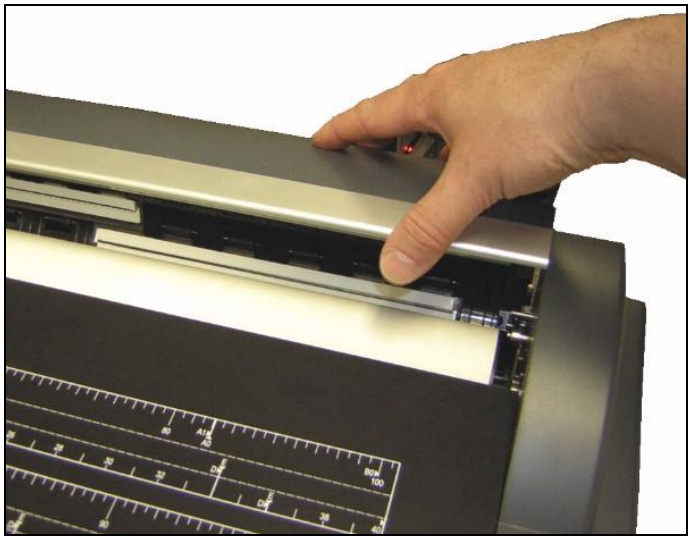
8. Insert all the cables into the correct sockets. Making sure they are all pressed fully home to ensure a good connection.



9. Rotate the control board bracket back into the position and replace the M3 Pan Head screws, making sure the large flat washers are on the side of the screw heads. Before tightening the screws, push the control board bracket completely to the back of the scanner, then tighten the screws up.



10. Replace the Lid Cover Extrusion Sub-A as in Chapter 11.3. If the Lid Cover Extrusion Sub-A catches on the control board bracket, remove the Lid Cover Extrusion Sub-A again, loosen the M3 Pan Head screws holding the control board bracket down, and move the control board bracket forward slightly, (or left / right if necessary), re-tighten the screws and refit the Lid Cover Extrusion Sub-A.



12.5. MAIN BOARD

12.5.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.
- Follow chapter 10.3 to position the scanner in the maintenance position when required.
- Employ static safety precautions when handling electronic boards and integrated circuits.

12.5.2 Tools

Medium pozi-drive screwdriver.

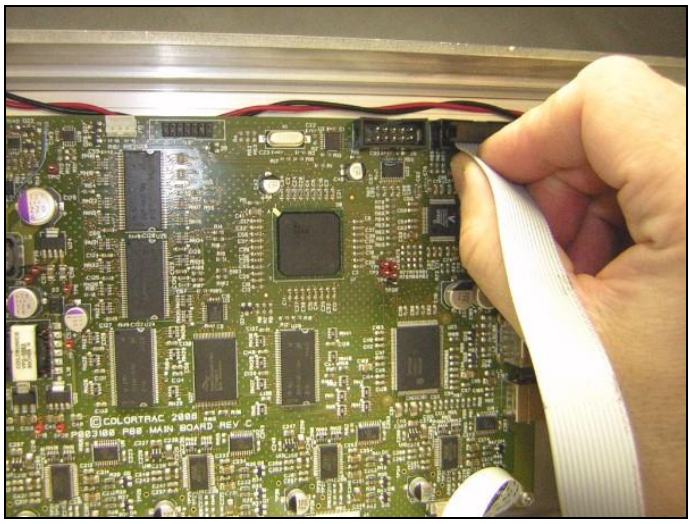
12.5.3 Associated Part Numbers

- P003100 Main Board

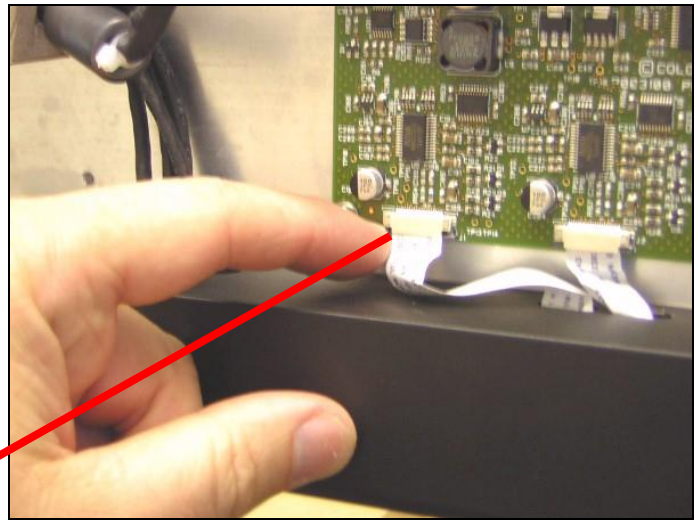
12.5.4 Procedures

1. Before removing any panels, power up the scanner and run the utilities program, and make a note of the 'motor speed' as in chapter 13.2 Running Utilities.

2. Remove the PCB Tray as in Chapter 11.4.

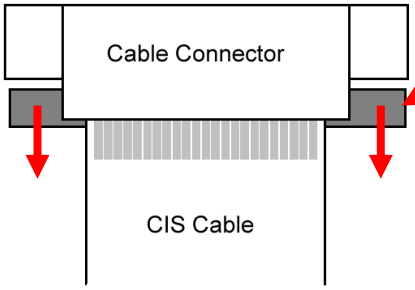


3. Disconnect all the remaining cables from the Main Board.

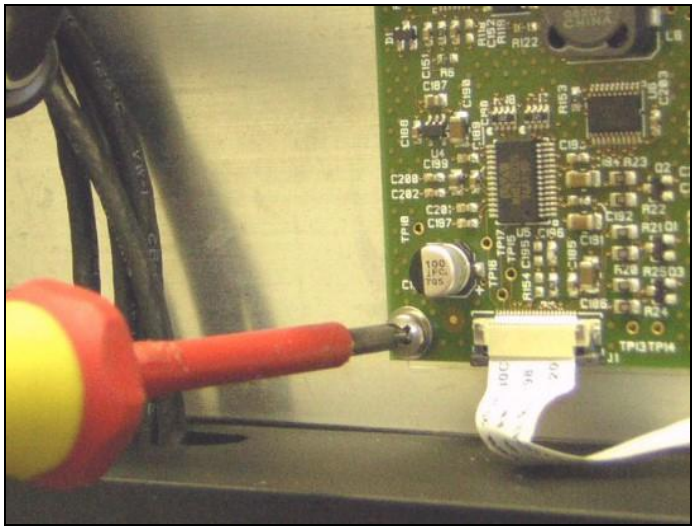


4. Release the locking plates holding the ribbon cables in place on all the connectors.

NOTE: Too much force doing this could result in breaking the locking plates, so care is required.

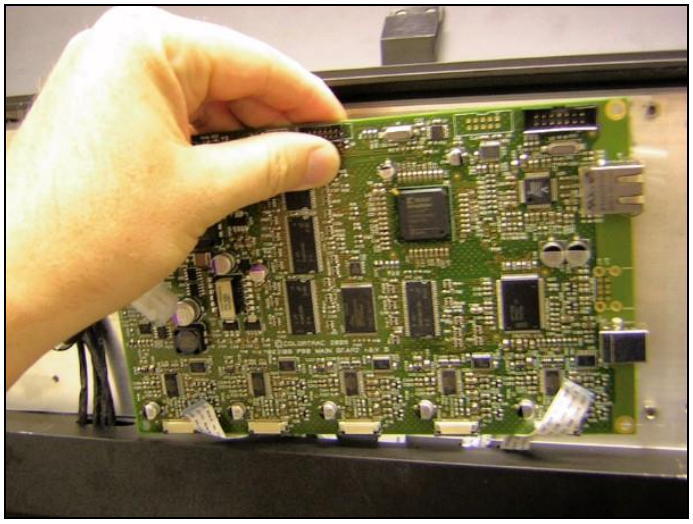


5. Remove the 4 x M3 Pan Head Screw holding the Main Board in place.



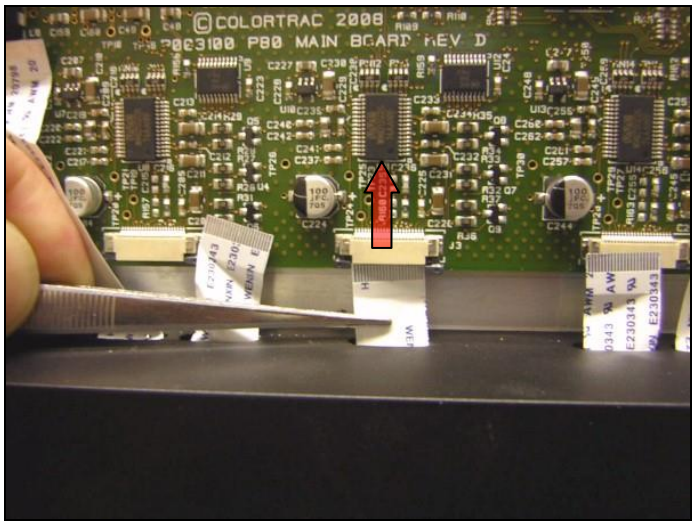
6. Lift the board away from the scanner, and remove the CIS cables by pulling them away from the board as you lift it out.

7. Refit the new board using the 4xM3 Pan Head screws. Make sure none of the cables are trapped behind the board as it is put in place.

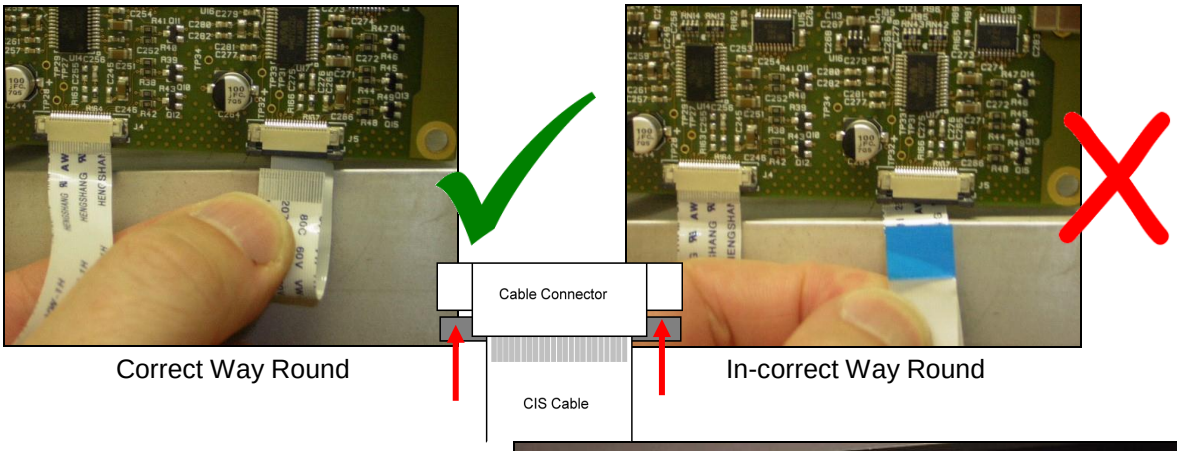


8. Using tweezers, push the CIS cables squarely back into the appropriate connectors. These cables are short to comply with EMC regulations. Take care not to damage the cables during insertion. Make sure the cable fits completely into the connector so that little or no silver is showing.

9. Close the locking plates to secure the cable and prevent it being pulled free.



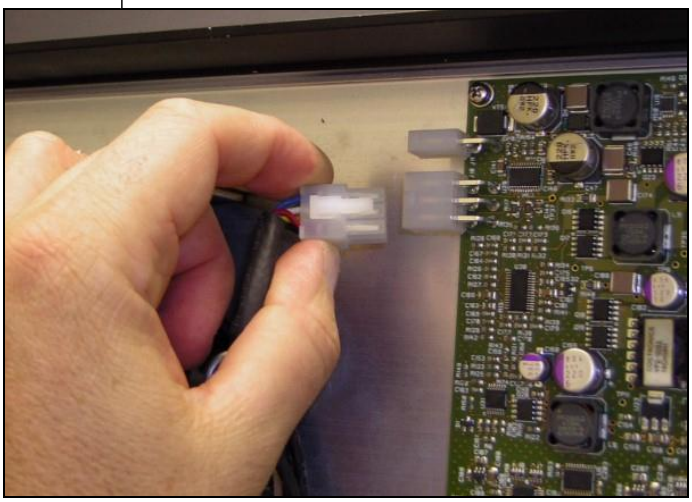
NOTE: The length of the cables in these pictures are longer than actual for illustration purposes only.



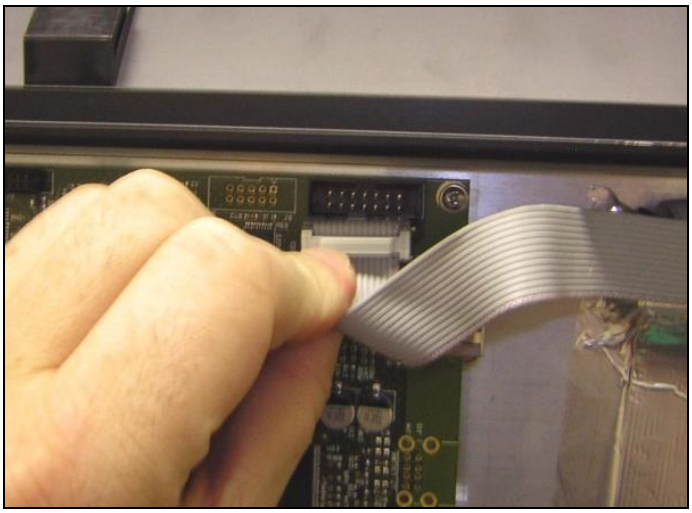
Correct Way Round

In-correct Way Round

10. Refit the Motor cable into its socket.



11. Refit the ribbon cable to the control cable.



12. Refit the PCB Tray as in Chapter 11.4 'PCB Tray'

13. After powering up the scanner, configure the main board to a Ci24 (only if necessary) using the instructions in chapter 13.2 ‘CONFIGURING THE MAIN BOARD’, then go to the utilities program as described in chapter 13.2 ‘RUNNING UTILITIES’ and set the Motor Speed (to the value noted at the beginning of this process), normalise and auto-stitch using the correct targets provided.

12.6. CIS PLATE ASSEMBLY

12.6.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.
- Follow chapter 10.3 to position the scanner in the maintenance position when required.
- Employ static safety precautions when handling electronic boards and integrated circuits.

12.6.2 Tools

- Small pozi-drive screwdriver
- Medium pozi-drive screwdriver
- Pliers
- 5.5mm Spanner
- Thread lock

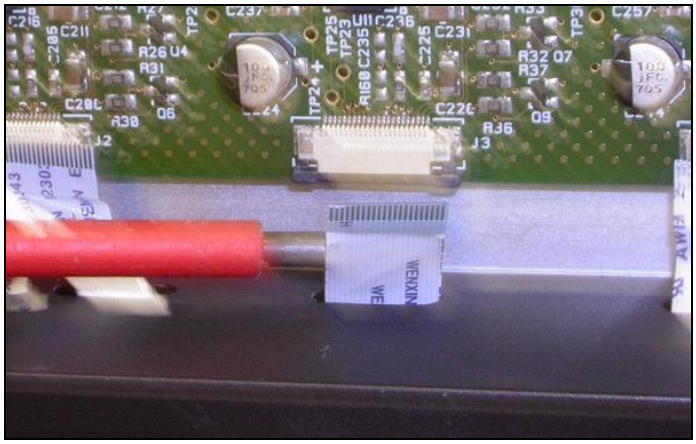
12.6.3 Associated Part Numbers

- P003402 Ci40 CIS Plate Sub-A
- P003401 Ci24 CIS Plate Sub-A

12.6.4 Procedures

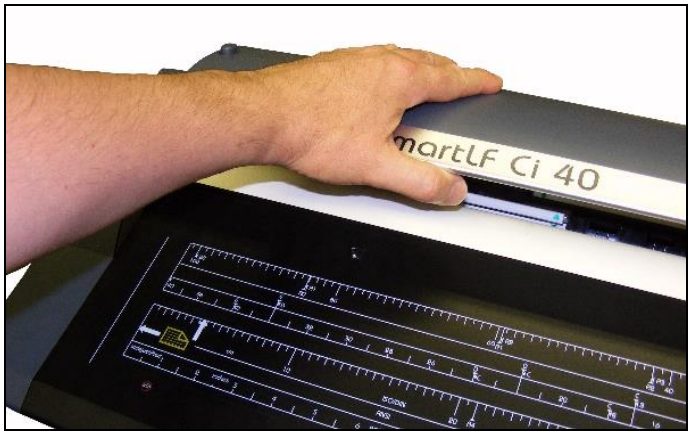
1. Remove the PCB Tray as in Chapter 11.4 'PCB Tray'

2. Do not remove the whole Main Board, but only release the 5x CIS ribbon cables from the board as described in Chapter 12.5.



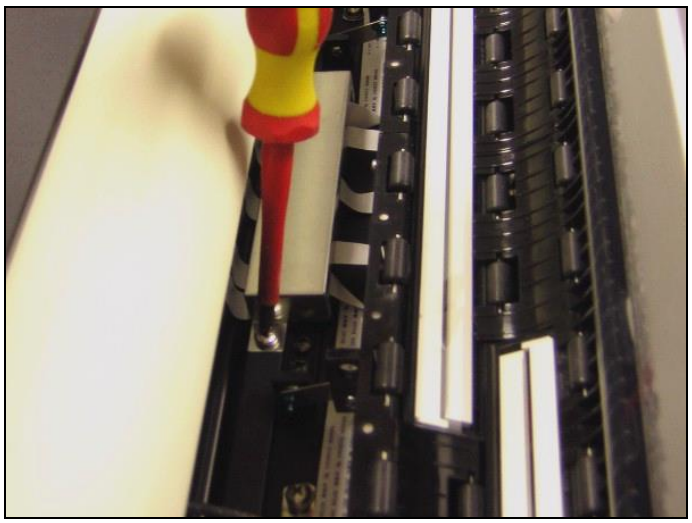
3. Press down on the locking buttons on both ends of the lid unit.

4. Lift the lid unit right back.

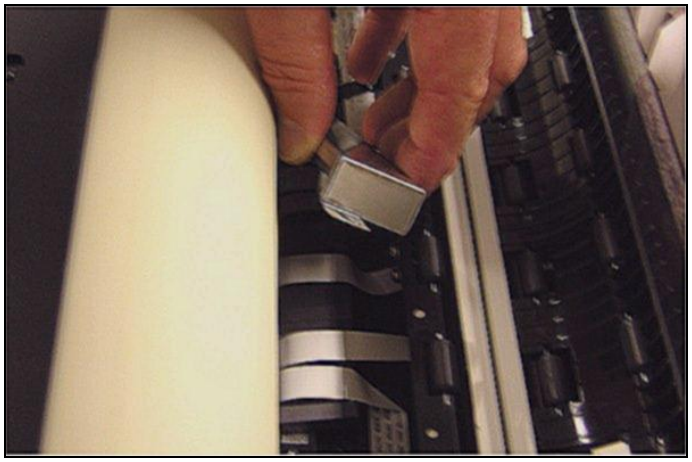


5. Remove the Mylar Paper Guide Sub-A as described in Chapter 12.2.

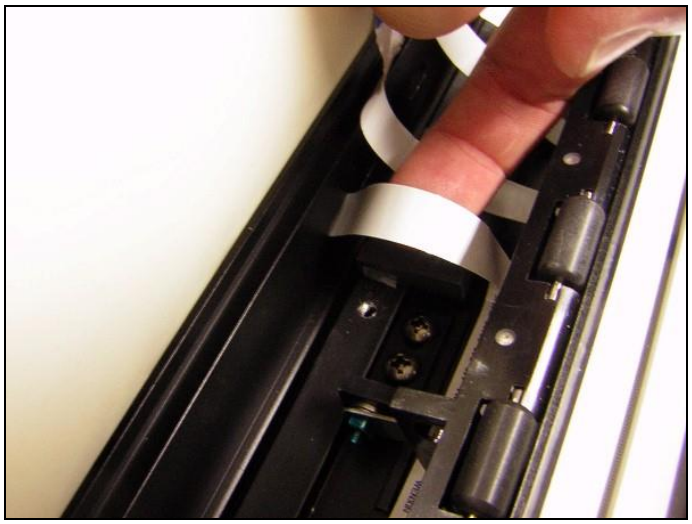
6. The ribbon cables are held down in a ferrite clamp. Remove the 2 x M4 Pan Head screws holding the Top Cover on.



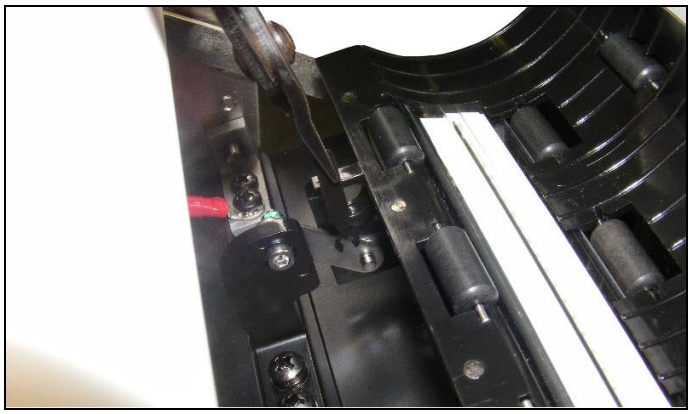
7. Remove the Top Cover and store safely.



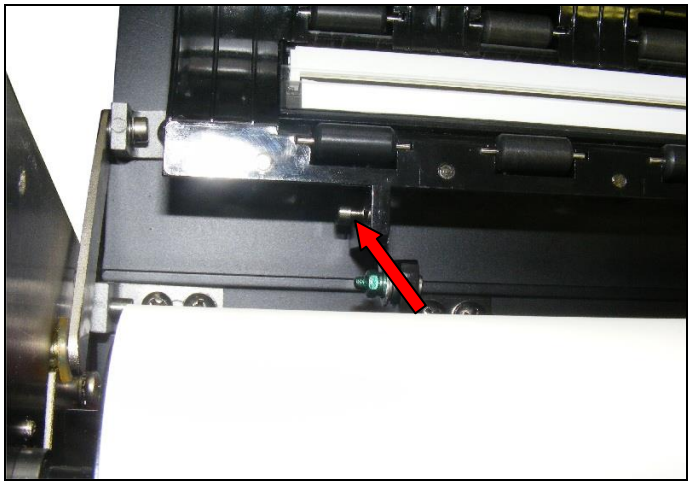
8. Pull the 5 x CIS ribbon cables through from the Main Board compartment.



9. Remove the extended circlip from the CIS bracket pin, by pulling with pliers until the clip comes off. It may be necessary to hold down the CIS Plate to prevent that moving while pulling on the circlip.

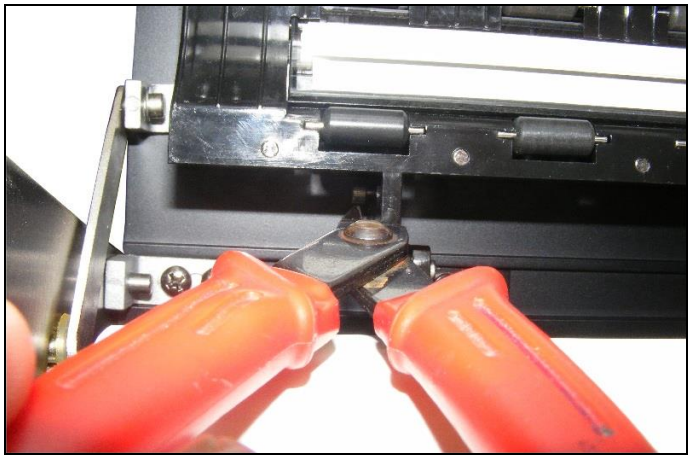


10. Push the bracket pin out through the bearing and bracket, allowing the arm to drop free from the CIS Plate Assembly.

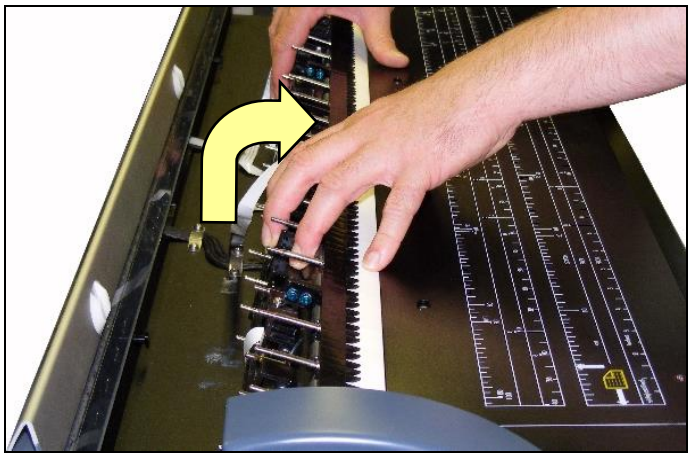


11. Use pliers to remove the bracket pin from the assembly.

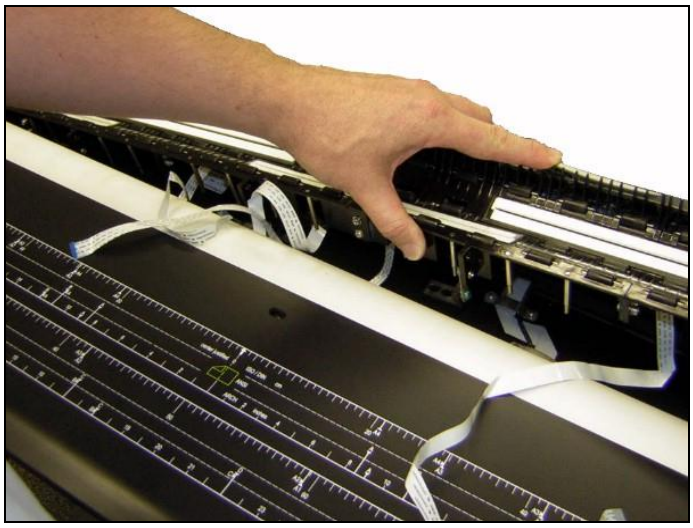
12. Repeat instructions 8 – 10 for all the bracket pins.



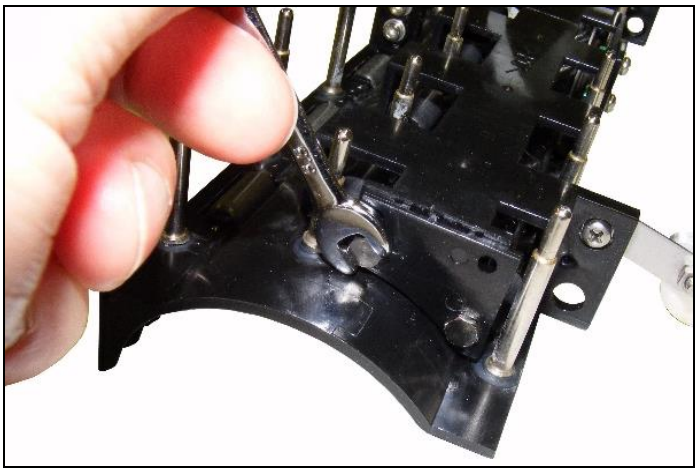
13. Pull the back of the CIS Plate Assembly and lift it up and away from the Lid Unit, remembering that the cables are still attached, so do NOT remove the CIS Plate as this point. Gently pull all the ribbon camera cables away from the lid unit. These cables are stuck down with doubles sided tape.



14. Lift the complete CIS Plate Assembly from the Scanner.

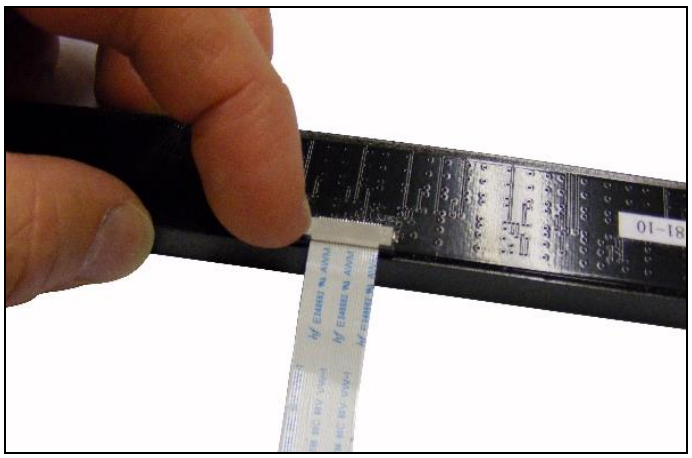


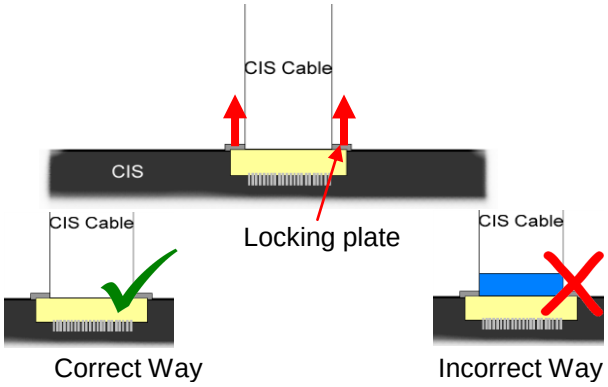
14. If an individual CIS is to be removed and replaced, remove the 4 x Hex Head Locating pins, (as if a screw) holding the CIS in, and remove the CIS, with the cable, from the front of the Plate Assembly.



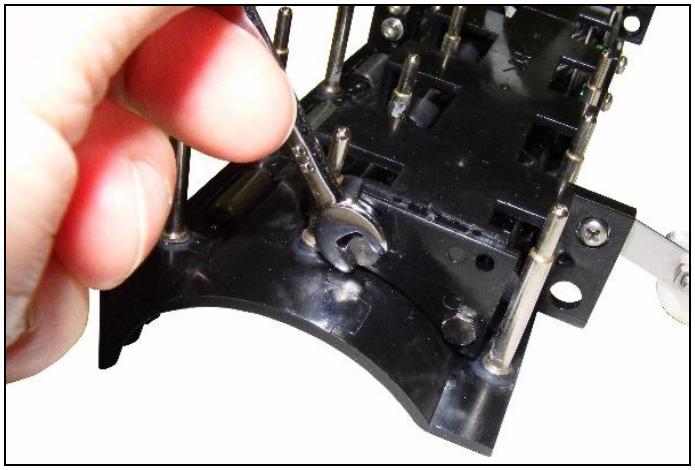
15. If only the CIS cable is to be replaced, it is recommended taking the CIS out of the Plate Assembly, as shown previously. Gently pull the locking plate out to release the cable, replace the cable and close the locking plate again. Making sure the cable is the correct way in the connector.

NOTE: It is recommended that a new CIS is fit with a new CIS cable.

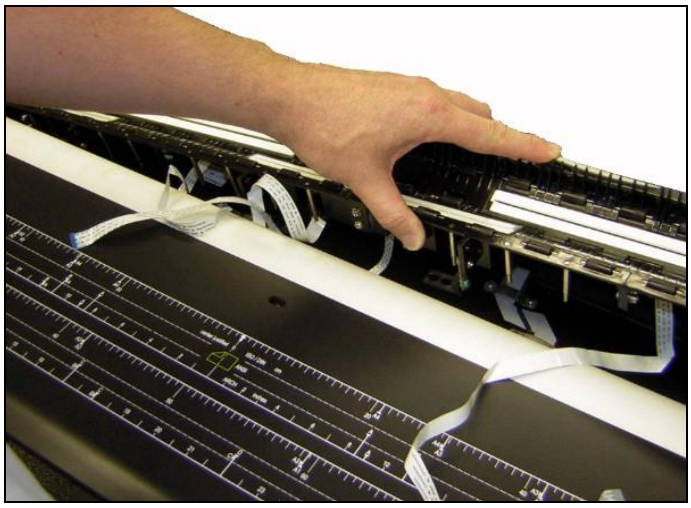




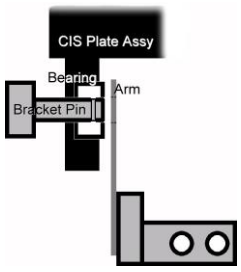
16. Feed the CIS cable though the Plate assembly and position the CIS back in, making sure it is the same way around as the other CIS arrays. Replace the 4 x screws to hold the CIS in.



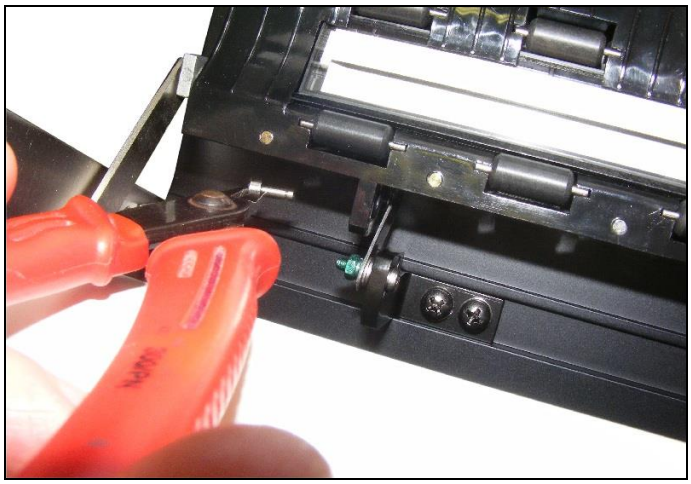
17. Position the Plate Assembly back into the chassis of the Scanner, and make sure the cables are not trapped under any part of the casing.



18. Refit the bracket pin in the first bearing of the CIS Plates Assembly. Do not push all the way through; stop when level with the other edge of the bearing.

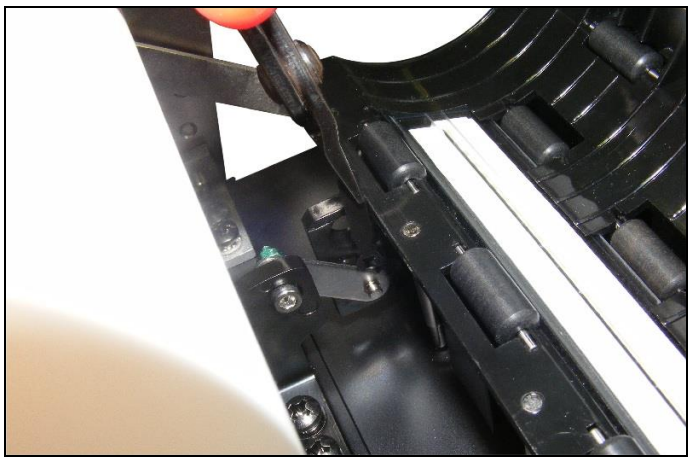


19. Lift the arm of the elbow brackets until the hole is level with the bracket pin, and then push the pin completely through the arm.

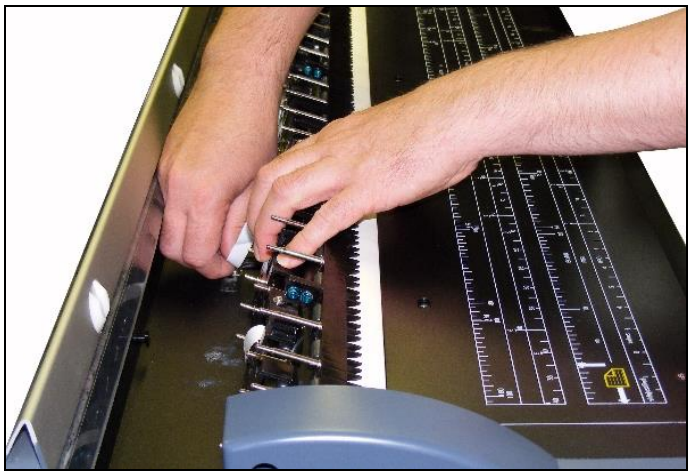


20. Press the Extended Circlip into the slot of the bracket pin, making sure it 'clicks' fully in place.

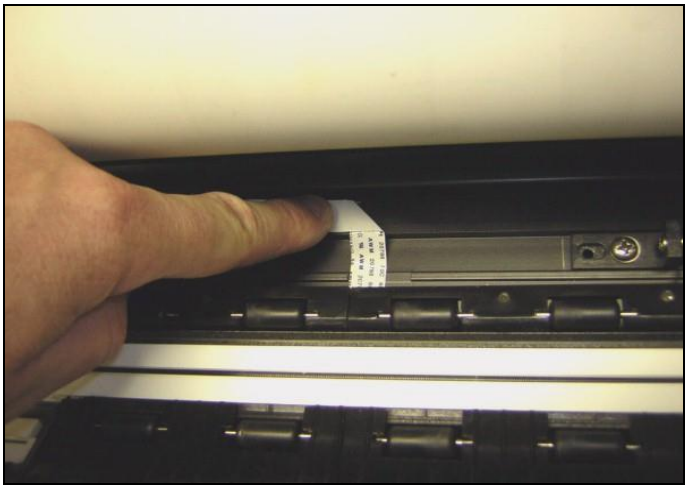
21. Repeat instruction 18 – 20 for all the bracket pins.



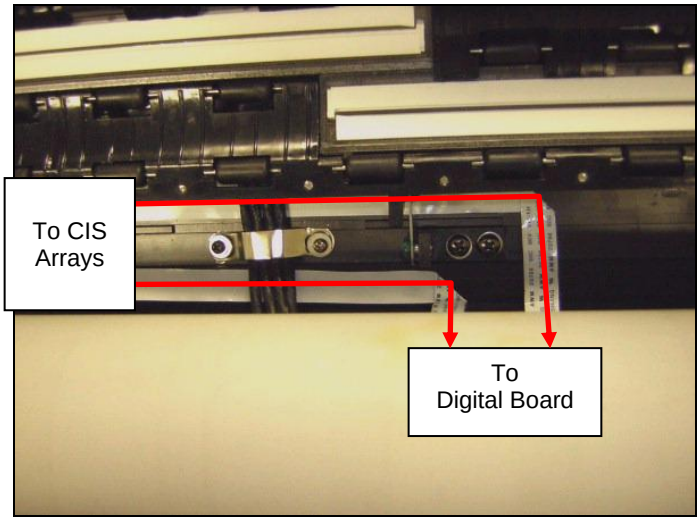
22. Hold the CIS Plate Assembly towards the Roller, and refit the cables as they were before. Use new double-sided adhesive tape should it be required. Make sure the cables do not have unnecessary twists or folds in or that the cable will not be crushed when the CIS Plate Assembly is fitted back in place.



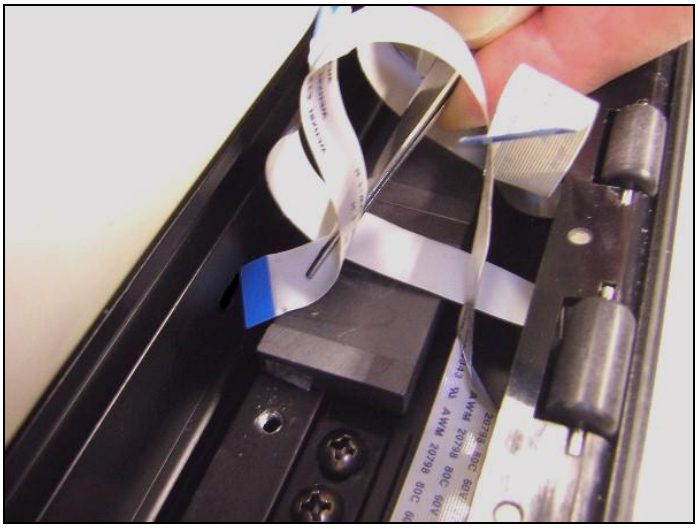
23. When sticking the cables back down in the same position as they were before, make sure the folds are in the same place, and no cables will be pulled out when the CIS Plate Assembly is in the raised position.
Line the first fold in the cable with the slot to the main board, and work your way back towards the CIS.



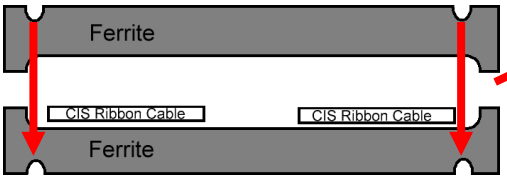
24. Do not overlap the cables along the same route. Each cable should run separately through the chassis to the Main Board. The CIS cables need to be routed over and to 90 degrees to any other cables leading to the Main Board.

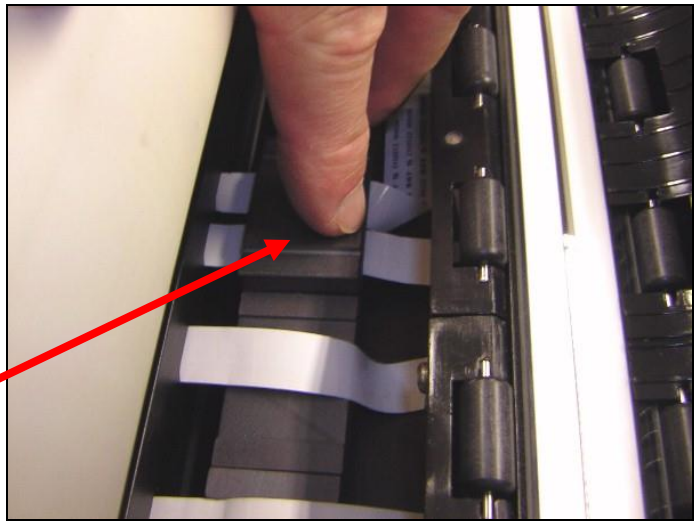


25. Feed the CIS ribbon cables through the appropriate slots back into the Main Board compartment.



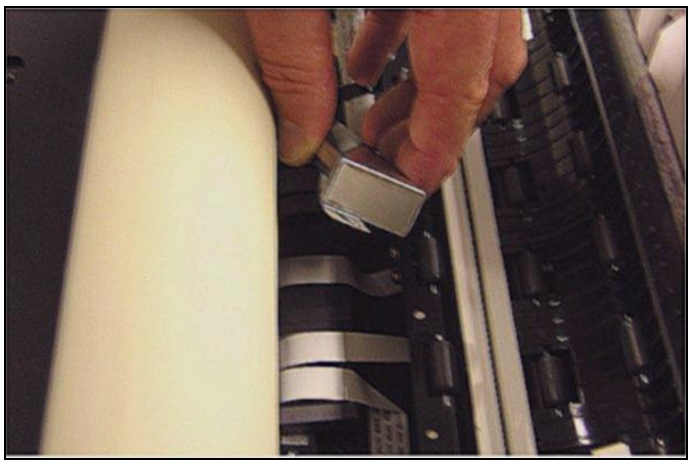
26. Place the 3 x ferrite's over the cables.





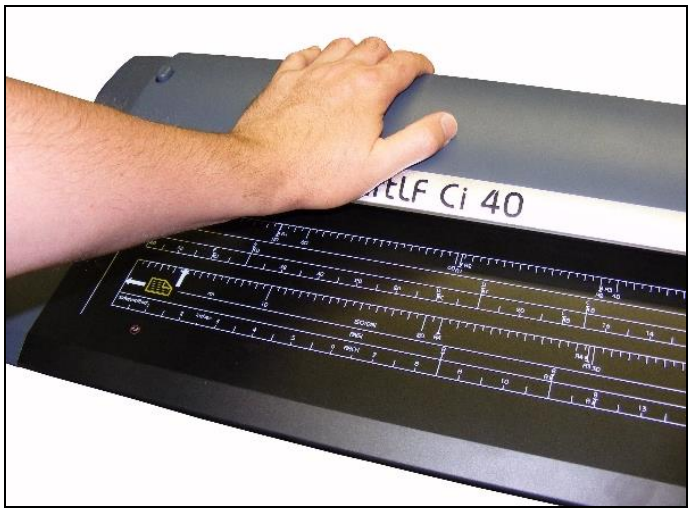
27. Refit the cover over the ferrites and screw down with the 2 x M4 Pan Head screws.

NOTE: It may be that the main roller needs to be removed to get the screwdriver and screw lined up enough to replace the screws. Follow instructions in Chapter 12.7.

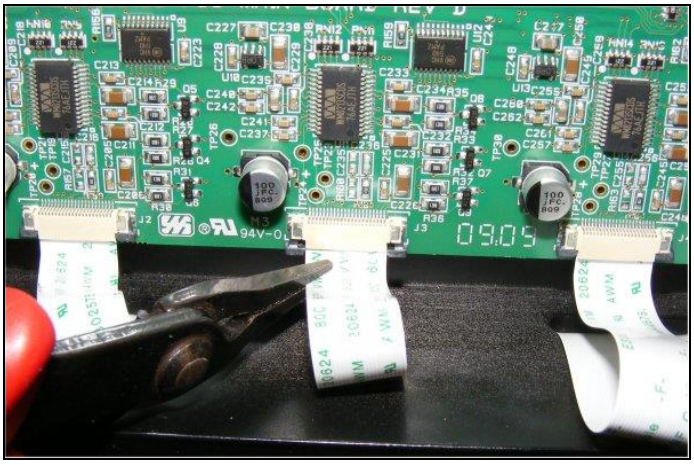


28. Fit new Mylar Paper Guide Sub-A as described in chapter 12.2

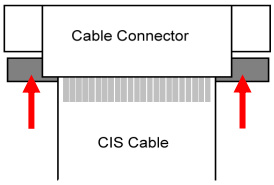
29. Close the lid unit and rotate the scanner to gain access to the main board underneath the scanner.



30. Using pliers, push the CIS cables squarely back into the appropriate connectors. These cables are kept short to maintain EMC compliance. Care must be taken to ensure the cables are not damaged during insertion. Make sure each cable is located properly so that no silver is showing.



31. Press the locking plate back up to make contact and stop the cable being pulled free again.



32. Replace the PCB Tray as in Chapter 11.4 'PCB Tray'.

12.7. MAIN ROLLER

12.7.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.

12.7.2 Tools

- Small pozi-drive screwdriver
- Medium pozi-drive screwdriver
- Allen Key

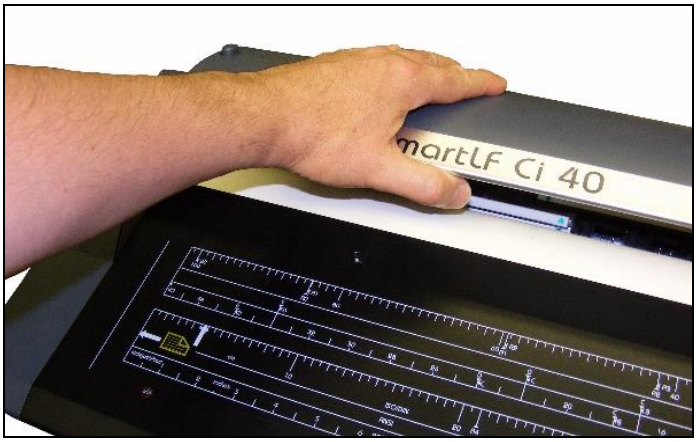
12.7.3 Associated Part Numbers

- P003356 Ci40 Main Roller Sub-A
- P003523 Ci24 Main Roller Sub-A
- P003319 Roller Shaft Pulley Sub-A
- P003151 Main Timing Belt

12.7.4 Procedures

1. Press down on the locking buttons on both ends of the Lid Unit.

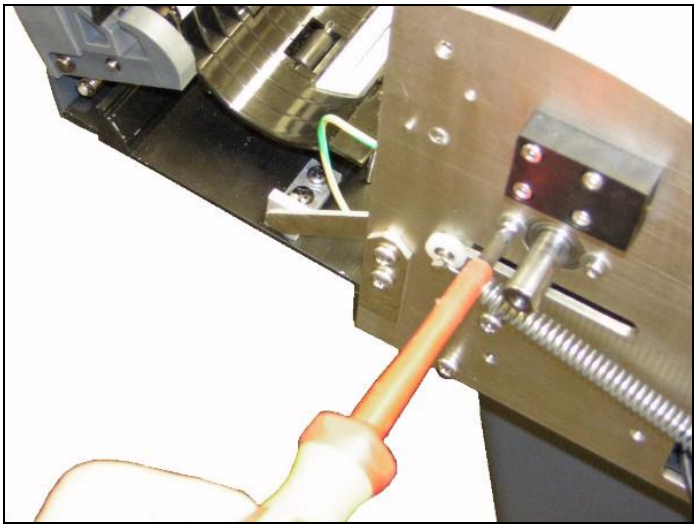
2. Lift the Lid Unit right back.



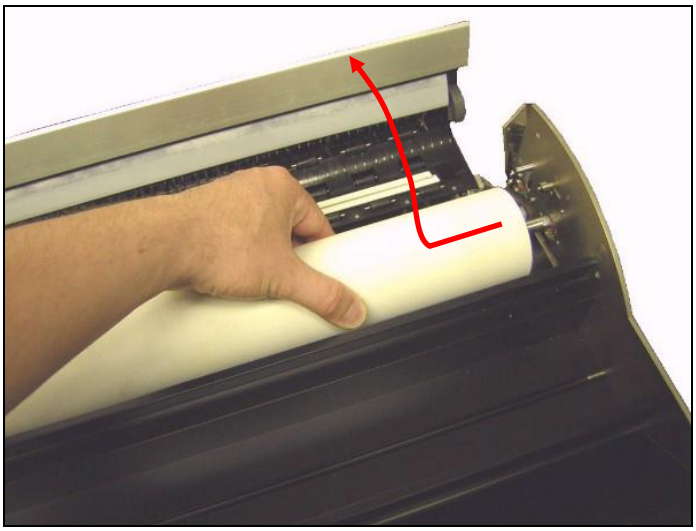
3. Remove Main Timing Belt as in Chapter 12.1 'Main Timing Belt'

4. Remove the roller shaft pulley as in Chapter 12.2

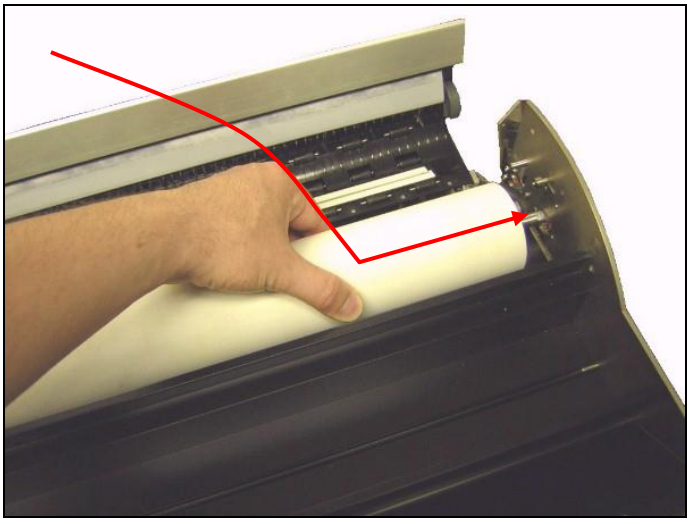
5. Remove the 2 x M3 Pan Head screws and washers from the left end plate that's holding the bearing in place.



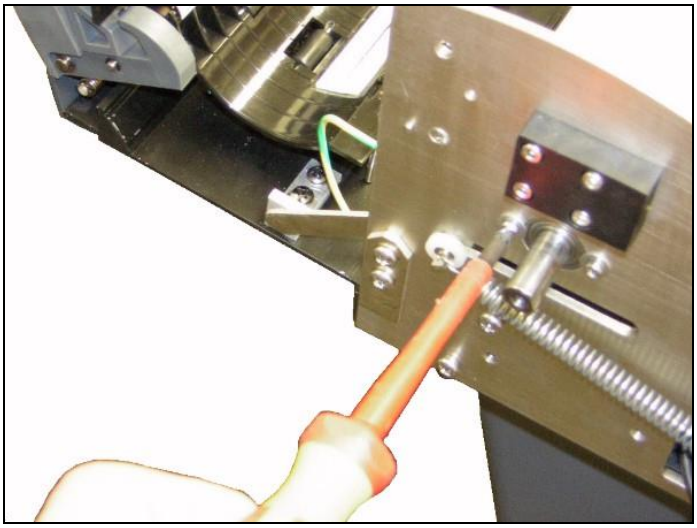
6. Pull the roller back until the shaft is free of the hole in the right end plate. Take the bearing off from the left end of the roller, and keep safe. Lift the roller up and out.



7. Refit the replacement roller in reverse to taking it out. Make sure that the longest roller shaft with the flat surface goes in the left side of the scanner with the drive motor, and goes in first. Then lower the other end down and push through the hole. Refit the bearings at either end.

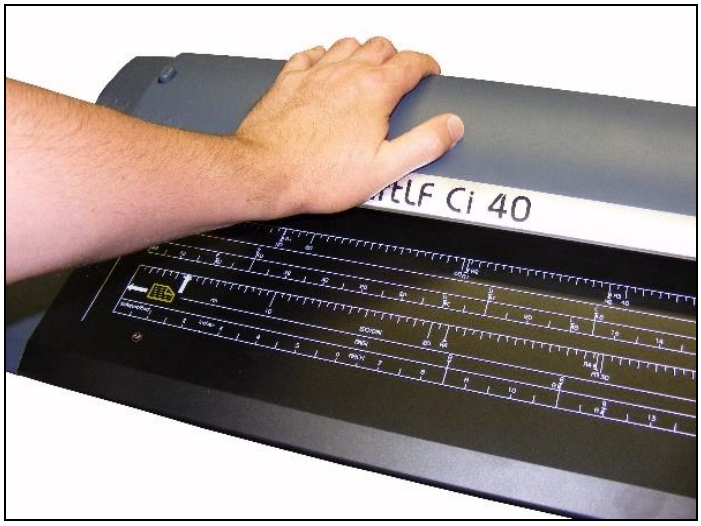


8. Replace the 2 x M3 Pan Head screws and washers from the left end plate.



9. Refit the roller shaft pulley as in chapter 12.3.

10. Replace the Main Timing Belt as in Chapter 12.1.



11. Close the Lid Unit.

12.8. UPPER PAPER SENSORS

12.8.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.
- Employ static safety precautions when handling electronic boards and integrated circuits.

12.8.2 Tools

- 3mm Allen Key
- Tweezers

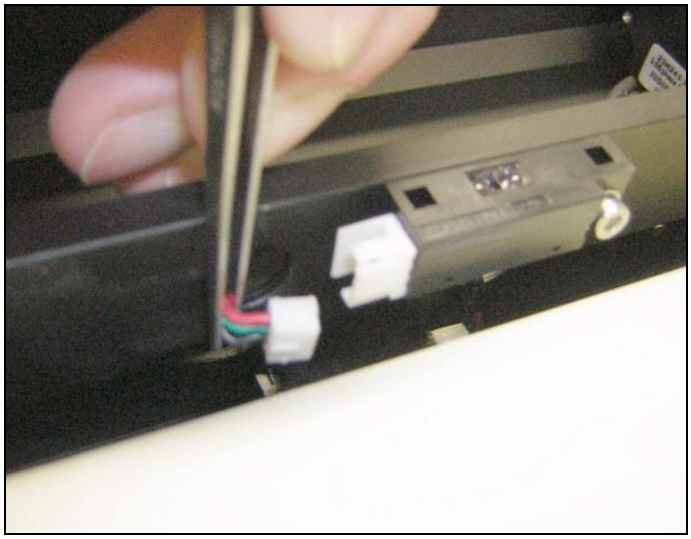
12.8.3 Associated Part Numbers

- P003146 Paper Sensor (part of P003304 Paper Sensor Pack of 4)

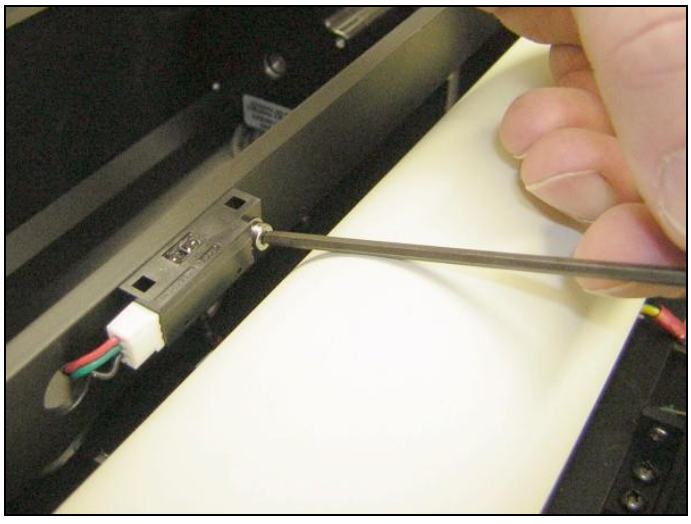
12.8.4 Procedures

1. Remove the Paper Tray Sub-A as in Chapter 11.5

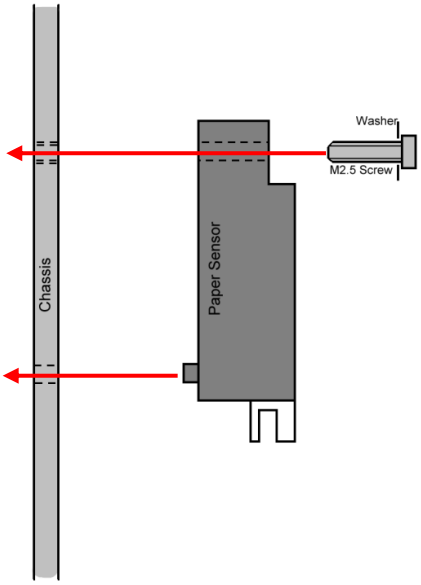
2. Using a pair of tweezers, remove the Sensor Cable.



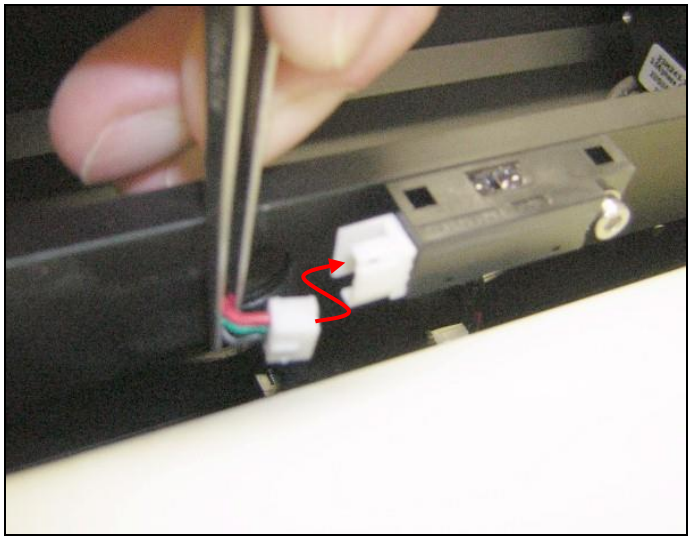
3. Remove the M2.5 screw holding the sensor to the chassis. The roller prevents direct access to the screw; the Allen key will need to be at an angle. Take care not to damage the roller with the allen key



4. When replacing the paper sensors, first fit the locating pin into the corresponding chassis locating hole. Then place the M2.5 screw through the paper sensor hole and screw into the threaded hole in the chassis. Make sure the sensor is finger tight so as not to distort it or break it.



5. Using the tweezers, reinsert the sensor cable, making sure it is pressed fully in and no excess wire is left out near the roller.



6. Refit the Paper Tray Sub-A as in Chapter 11.5.

7. Close the Lid Unit making sure it's fully latched.

12.9. LOWER PAPER SENSOR

12.9.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.

12.9.2 Tools

- 3mm Allen Key
- Tweezers

12.9.3 Associated Part Numbers

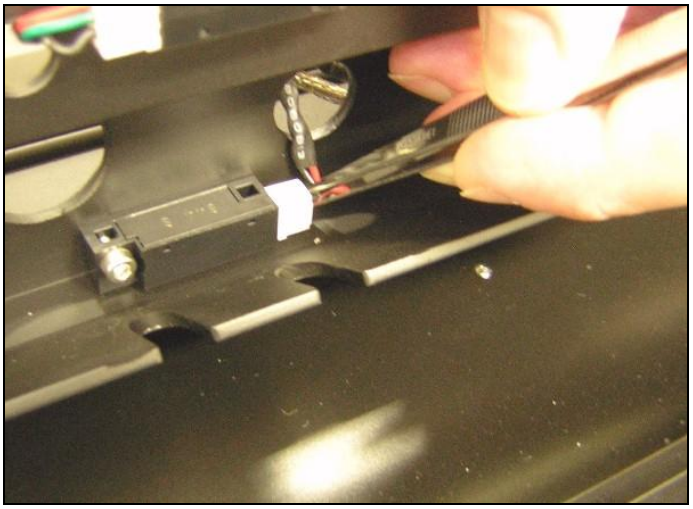
- P003146 Paper Sensor (part of P003304 Paper Sensor Pack of 4)

12.9.4 Procedures

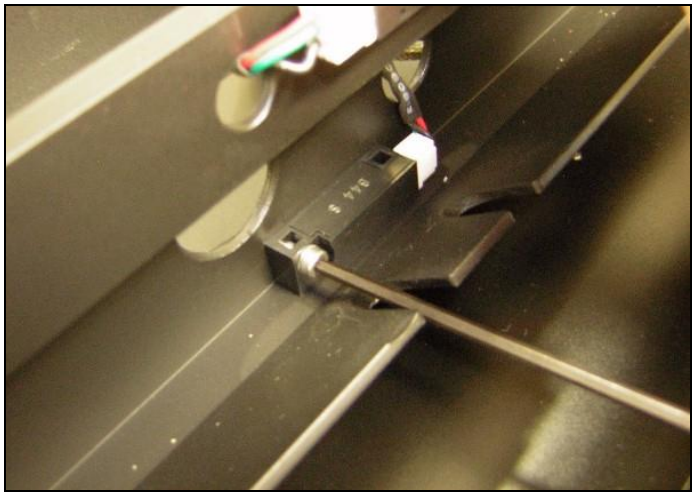
1. Remove the Paper Tray Sub-A as in Chapter 11.5.

2. Remove the Main Roller as in Chapter 12.7.

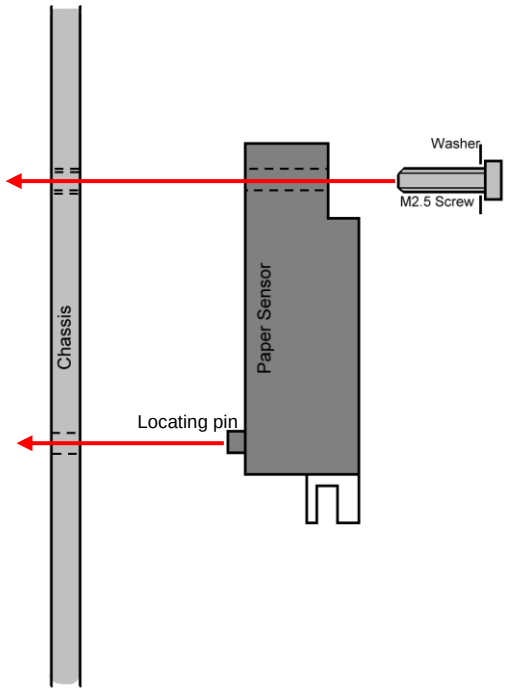
3. Remove the Sensor Cable using tweezers.



4. Remove the M2.5 screw holding the sensor to the chassis.



5. When replacing the paper sensors, first fit the locating pin into the corresponding chassis locating hole. Then place the M2.5 screw through the paper sensor hole and screw into the threaded hole in the chassis. Make sure the sensor is finger tight so as not to distort it or break it.



6. Refit the Main Roller as in Chapter 12.7.

7. Refit the Paper Tray Sub-A as in Chapter 11.5

12.10. POWER SWITCH

12.10.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.

12.10.2 Tools

- Medium pozi-drive screwdriver

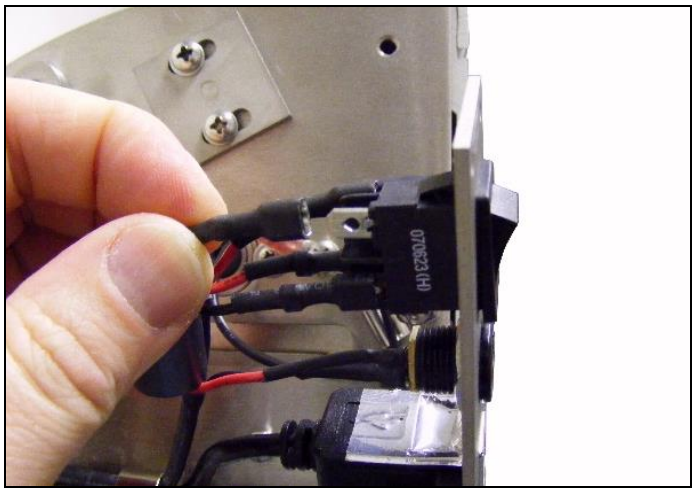
12.10.3 Associated Part Numbers

- P003130 Power Switch

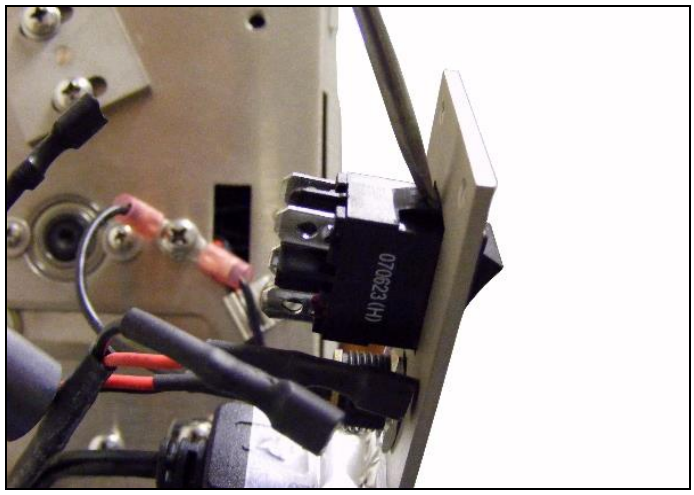
12.10.4 Procedures

1. Remove the Right end cover as in Chapter 11.2.

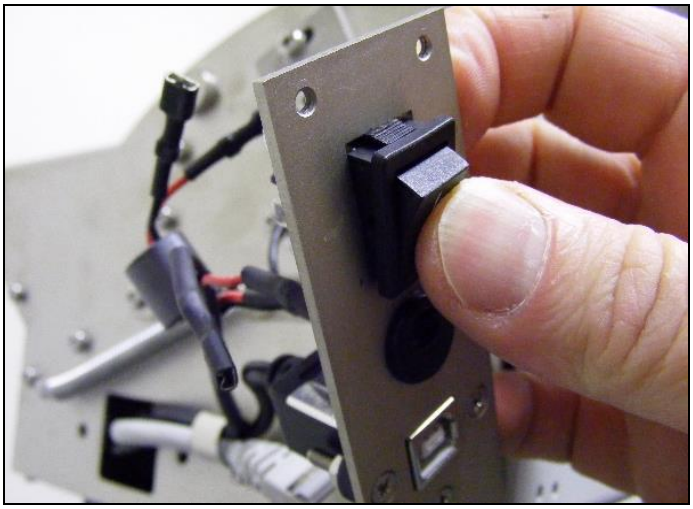
2. Pull the connectors from the contacts on the power switch.



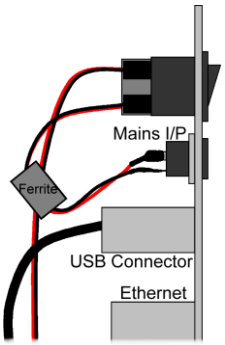
3. Press the locking tags at either end of the switch and push the switch out through the hole in the bracket.

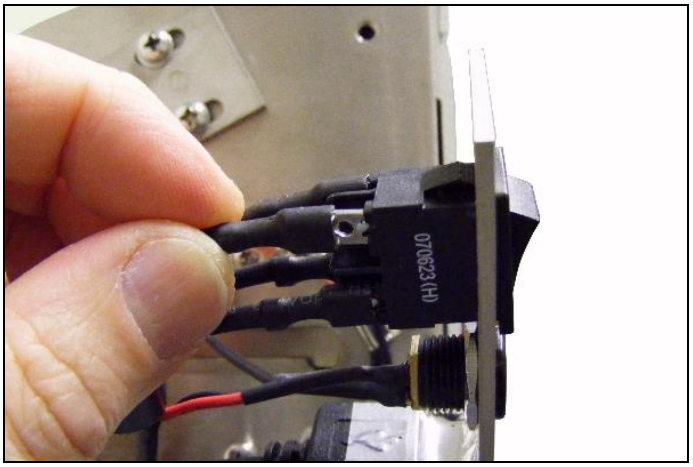


4. Press the replacement switch back through the hole in the bracket making sure the 'on' indicator '1' is at the top. Press firmly to ensure it is locked properly in place.



5. Push the wire terminals back onto the contacts making sure the red wires are on one side and the black on the other.





6. Refit the Right end cover as in Chapter 11.2.

12.11. LID POWER CUT OFF SWITCH

12.11.1 Safety Precautions

- Ensure the power is completely disconnected from the scanner unit.
- Ensure the scanner is positioned on a stable maintenance platform.
- Follow chapter 10.3 to position the scanner in the maintenance position when required.

12.11.2 Tools

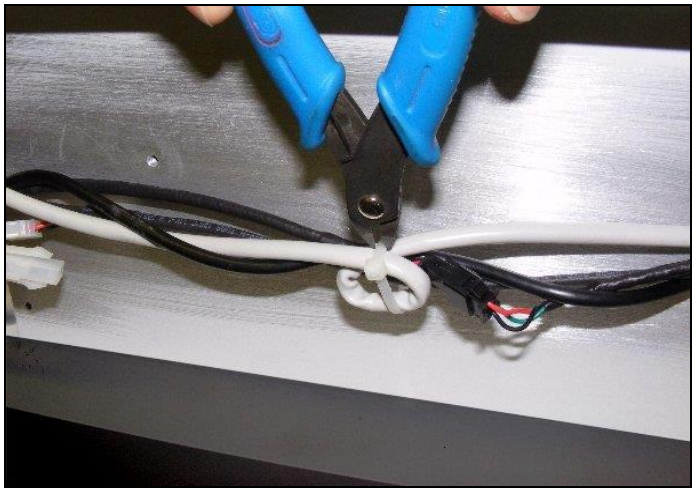
- Medium pozi-drive screwdriver

12.11.3 Associated Part Numbers

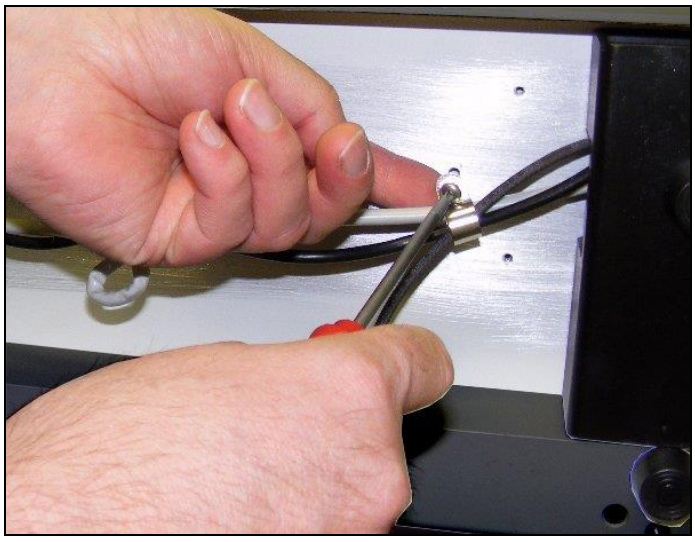
- P003125 Micro Switch Sub-A

12.11.4 Procedures

1. Remove the Right End Cover as in chapter 11.2.
2. Remove the Cable Tray Right Sub-A as described in PCB Tray chapter 11.4.



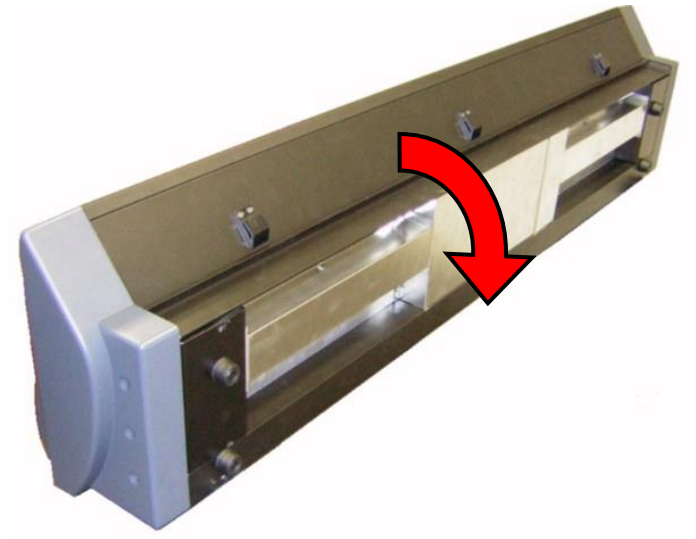
3. Cut any tie-wraps holding the cables together.



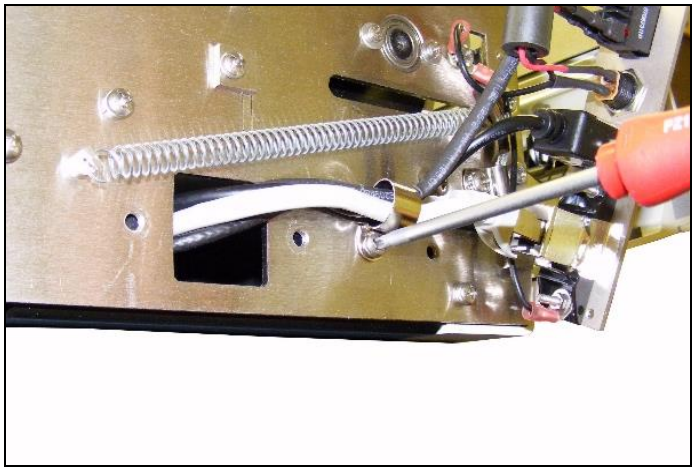
4. Remove the ‘P’ clip nearest the right hand end that is holding the cables to the chassis.

5. Disconnect the black plug and socket going to the microswitch from the control panel.

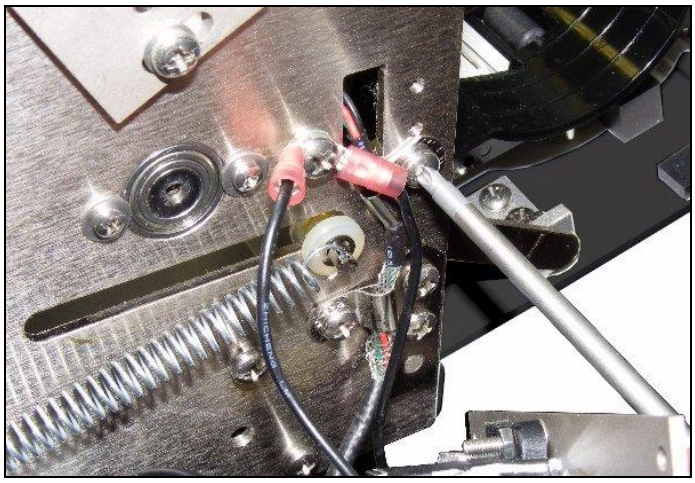
6. Rotate the scanner down as described in chapter 10.3 “Scanner Maintenance Postion”



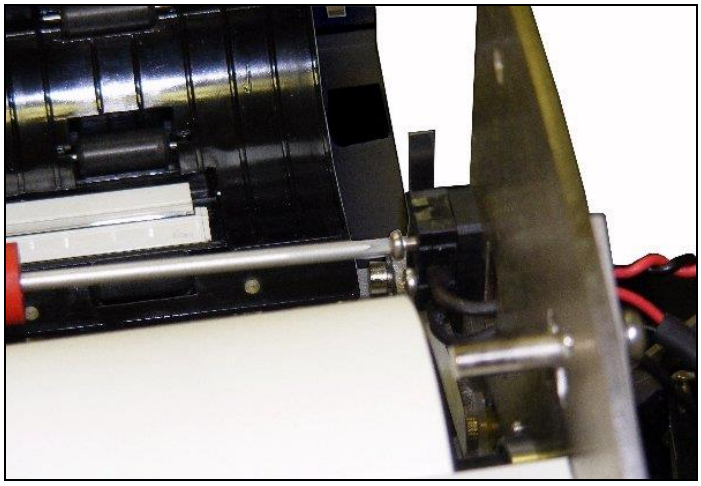
7. Remove the ‘P’ clip from the right end plate holding the cables.



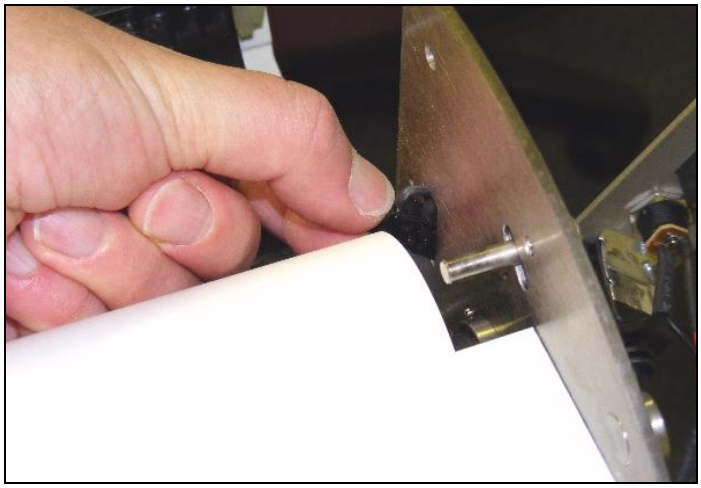
8. Remove the 2 x ‘P’ clips holding the cable from the Micro Switch.



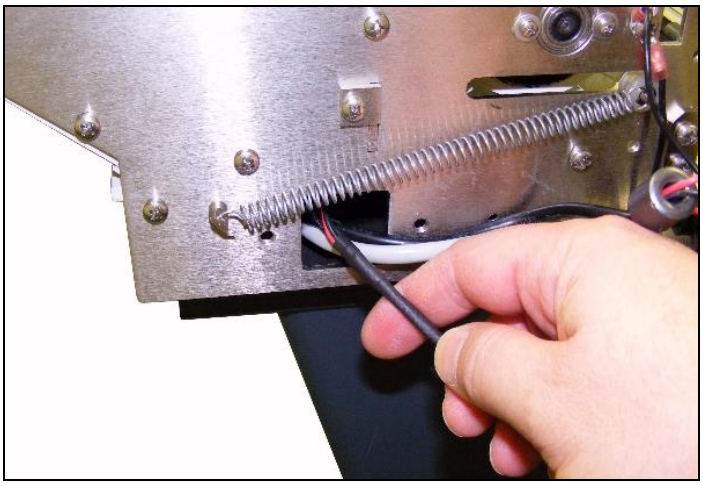
9. Remove the 2 x M2.5 screws holding the Micro Switch to the inside of the right end plate. Make sure to retain the Micro Switch shim once the switch is removed.



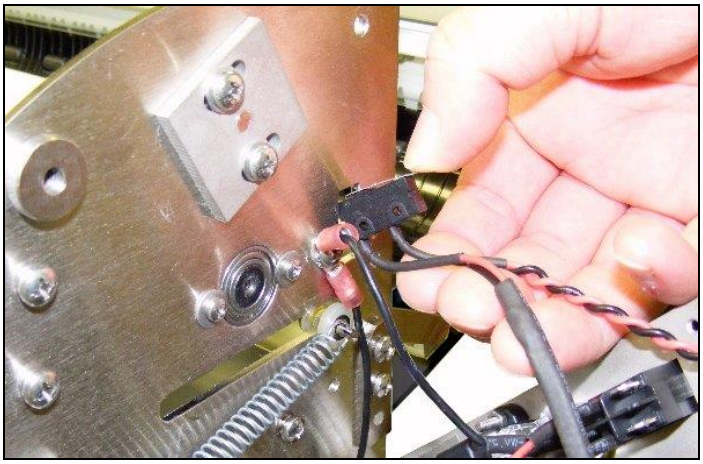
10. Feed the Micro Switch through the hole in the right end plate.



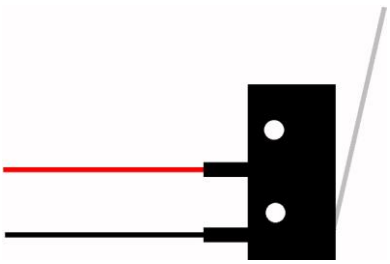
11. Pull the cable through from the main board area of the scanner.

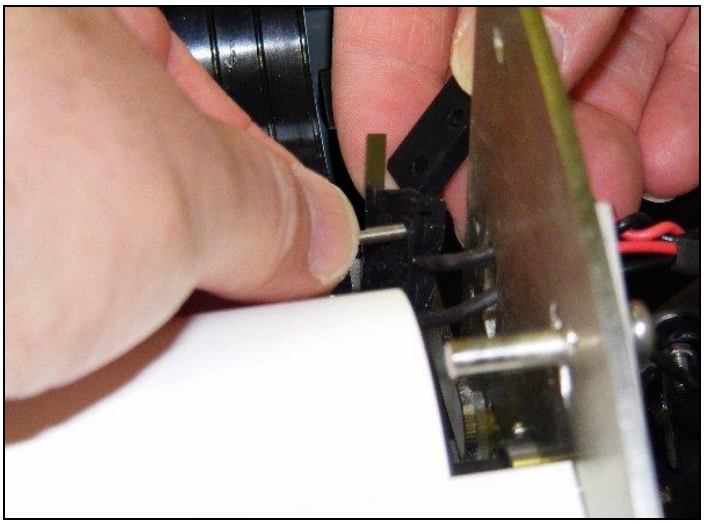


12. Feed the replacement Micro Switch through the hole of the right end plate.

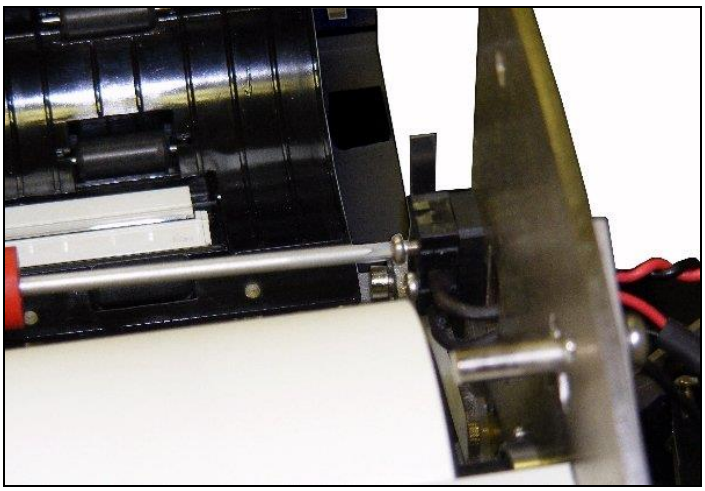


13. Fit the 2 x M2.5 screws through the Micro Switch and the shim. Make sure when fitting the switch so the lever is facing upwards.

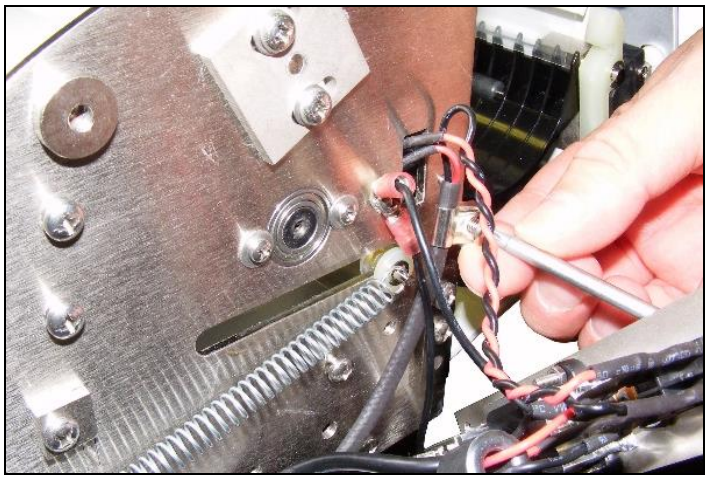




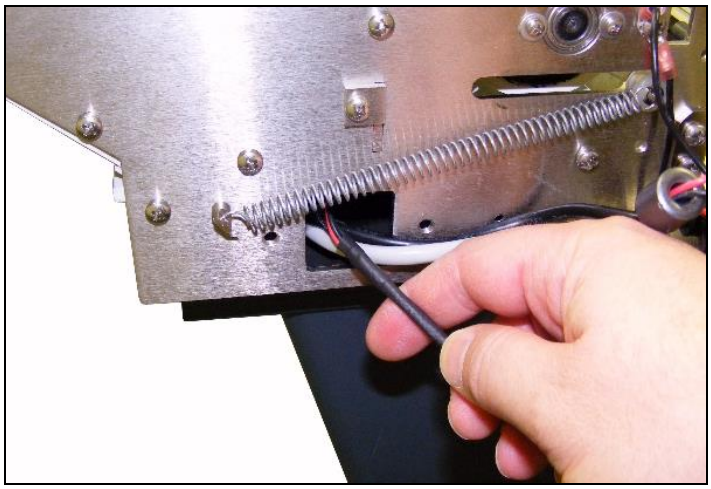
14. Tighten the 2 x M2.5 screws.



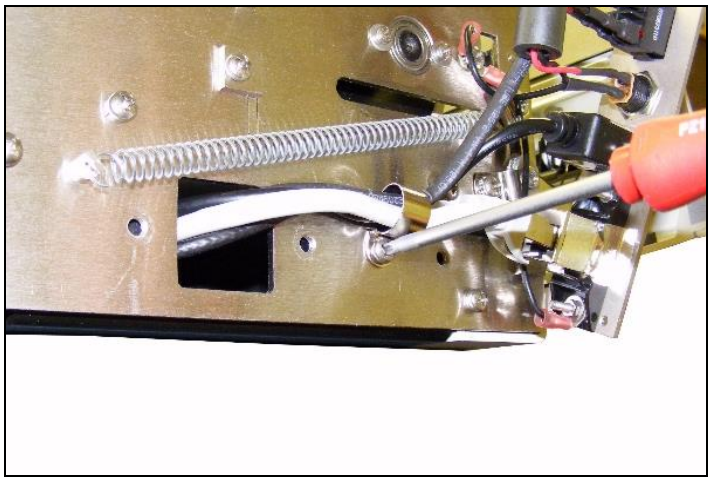
15. Refit the 2 x ‘P’ clips holding the power cable to the right end plate.



16. Feed the cable from the Micro Switch through the right end plate into the main board area.

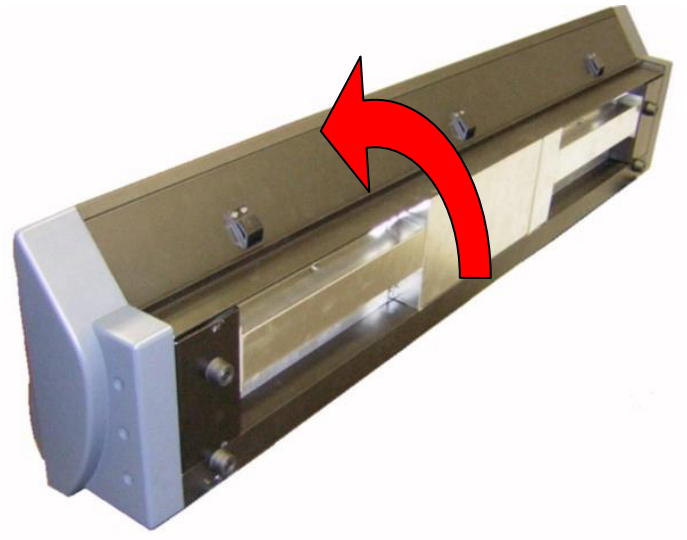


17. Replace the ‘P’ clip to hold the cables to the right end plate. Make sure the ‘P’ clip is upwards and holds the cable away from where the end cover will go.

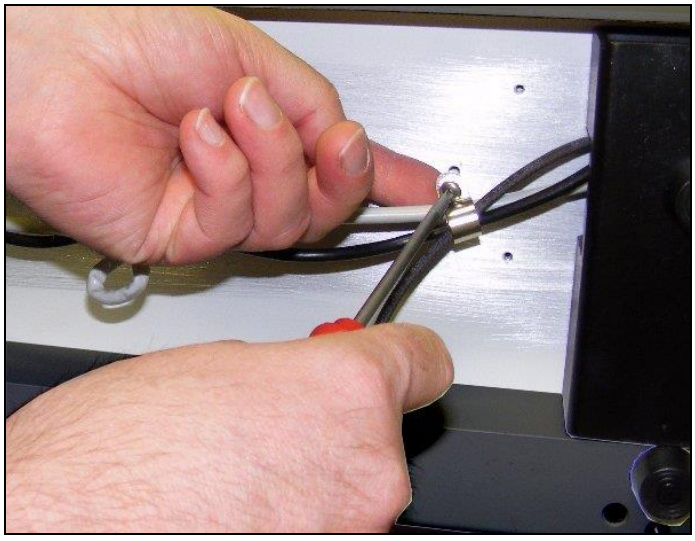


18. Replace the Right End Cover as in chapter 11.2.

19. Rotate the scanner as described in chapter 10.3 “Scanner Maintenance Postion”



20. Refit the ‘P’ clip to hold the cables together underneath the scanner.



21. Reconnect the plug and socket for the cable from the microswitch to the control board.

22. Fit a replacement tie-wrap to hold the cables together.

23. Refit the PCB Cable Tray Right Sub-A as described in PCB Tray chapter 11.4.

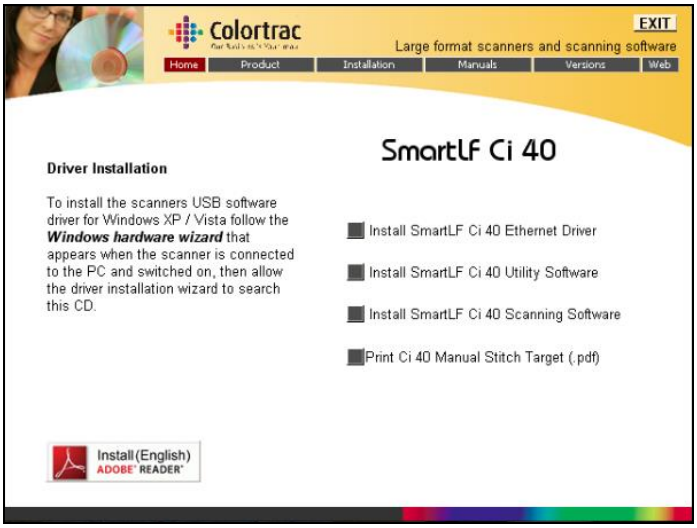
13. UTILITIES PROGRAMS

13.1. INSTALLATION

1. Insert Installation CD provided with the scanner.

2. Go to the “Installation” tab.

3. Run the “Install SmartLF Ci scanner Utilities Software”


Colortrac
EXIT
Large format scanners and scanning software
Home
Product
Installation
Manuals
Versions
Web
SmartLF Ci 40
Driver Installation
To install the scanners USB software driver for Windows XP / Vista follow the Windows hardware wizard that appears when the scanner is connected to the PC and switched on, then allow the driver installation wizard to search this CD.
Install SmartLF Ci 40 Ethernet Driver
Install SmartLF Ci 40 Utility Software
Install SmartLF Ci 40 Scanning Software
Print Ci 40 Manual Stitch Target (.pdf)
Install (English)
ADOBE READER

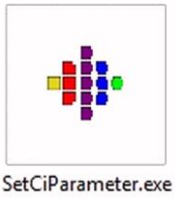
4. Follow the installation instructions until complete.

13.2. CONFIGURING THE MAIN BOARD

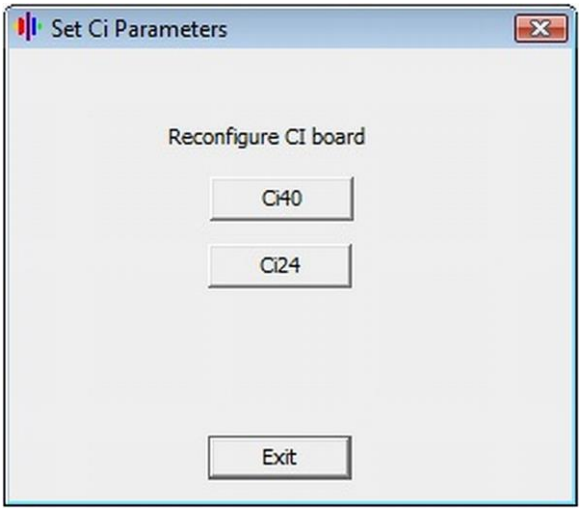
1. Go to support website and download and install the Ci Set Parameters Program from the Ci page.

   www.colortracsupport.co.uk
   login details (if un-known) available on request from support.

2. The program installs on the PC, and can be located in the C:\Program Files\Colotrac\SetCiParamters. Run the exe

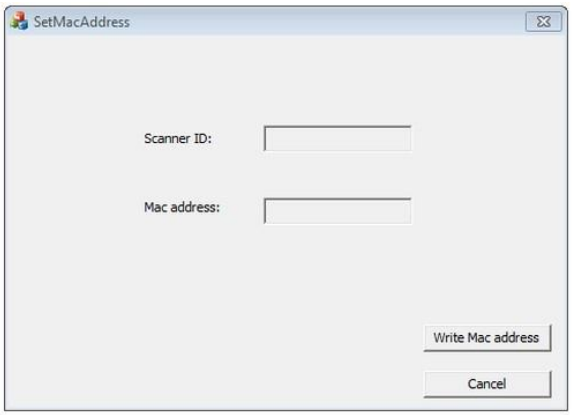


3. Press the appropriate button to set the Main Board to either a Ci24 or a Ci40.



4. Set the MAC address by going to http://www.colortracsupport.com/setmac.zip

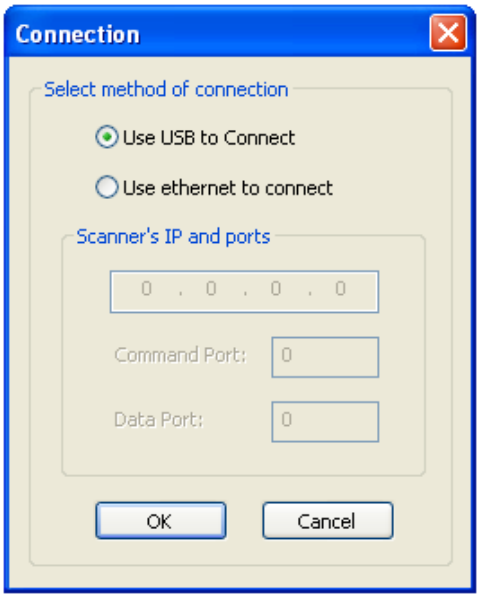
5. Run the setmac.exe, and press 'Write Mac address' to install the Ethernet MAC settings that are unique to the scanner.



13.3. RUNNING UTILITIES

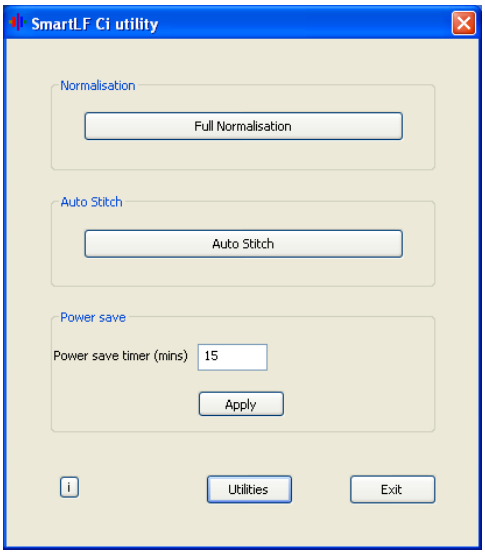
1. Open the Ci Utilities program by double clicking on the icon on the desktop.

2. Choose if using Ethernet or USB for communicating with the scanner. If using Ethernet, enter the IP address as given by the IT department.



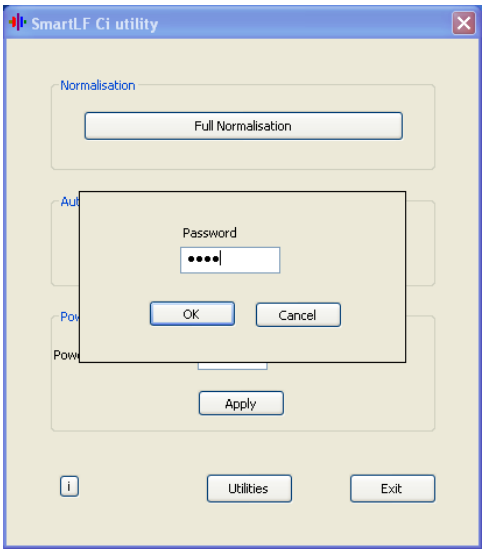
3. The opening screen will give the option on running a full normalisation, or an auto stitch procedure. With additional utilities options available.

4. Power Saving timer can be adjusted to increase or reduce the time before the scanner goes to sleep when not in use.

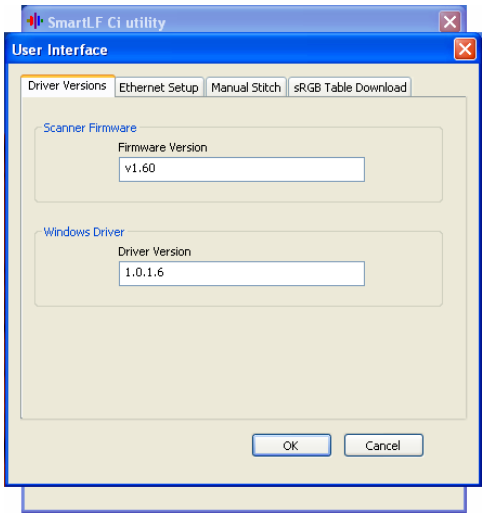


5. Right click in any part of the opening screen, and enter the password “pass” for the advanced utilities functions.

NOTE: This is for engineers only and must not be given to end-users unless absolutely necessary.

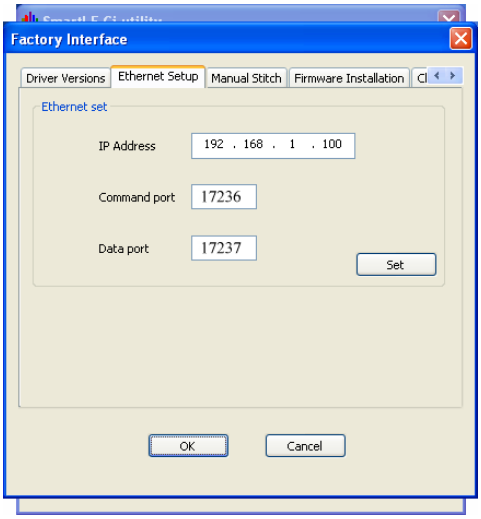


6. The first screen in the advanced utilities shows the current firmware and driver held in the scanner, this is for reference only.



7. The Ethernet Setup tab holds the IP address and port details for scanning over the network.

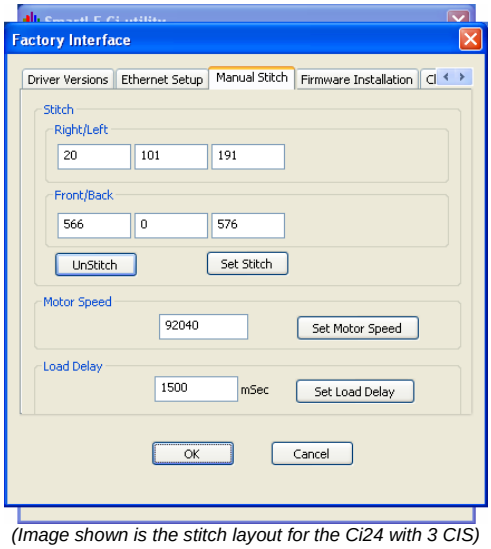
The IT department needs to issue the IP address. The Command and Data ports may need changing to 17236 (Command) and 17237 (Data) or to ones issued by the IT department.



8. The Manual Stitch tab allows for manual adjustments to be made to the stitch values, and correct any differences between CIS arrays.

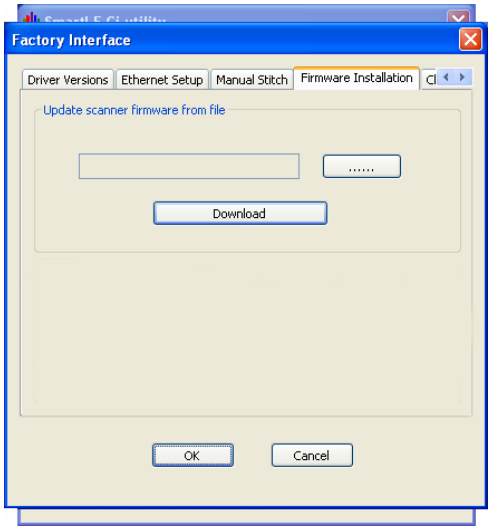
9. Set Motor Speed. This can be adjusted by over writing a value and clicking ‘Set Motor Speed’

10. Set Load Delay changes the time it takes for media to me taken in by the scanner. 1500mSec equals 1.5 seconds, increase this for a longer delay.



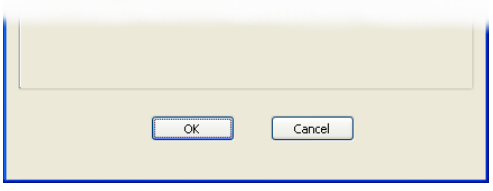
(Image shown is the stitch layout for the Ci24 with 3 CIS)

11. Firmware Installation will allow the firmware to be updated. The firmware can be downloaded from the website, or sent via email, and stored on the PC connected to the scanner. Use the browse button (“…..”) to find the stored file, and ‘Download’ to update the file into the scanner*. Restart the scanner and software on completion.



*** IMPORTANT NOTE: UNDER NO CIRCUMSTANCES MUST COMMUNICATION BE LOST WITH THE SCANNER DURING FIRMWARE DOWNLOAD AS THIS WILL DESTROY THE MAIN BOARD**

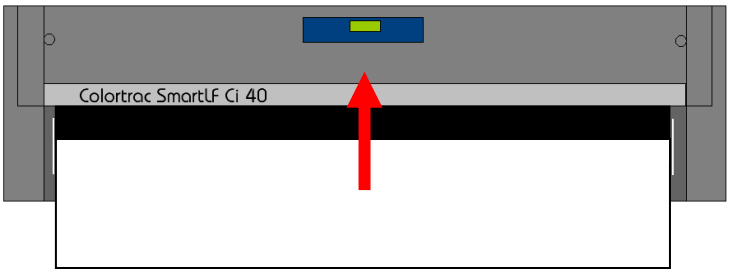
12. Click ‘OK’ to close the utilities screen.



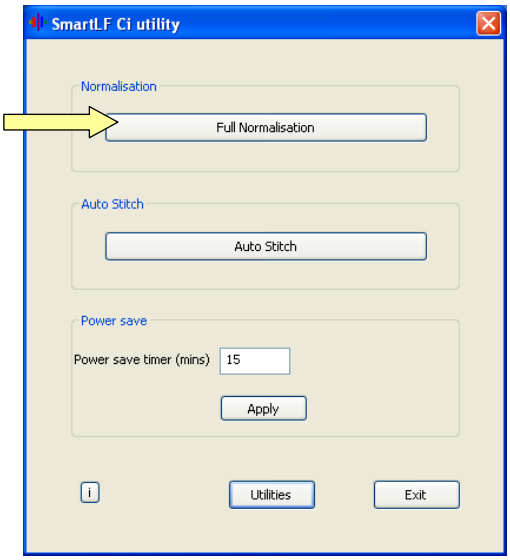
13.4. NORMALISATION

1. Open Ci 40 utilities as described in Chapter 13.2

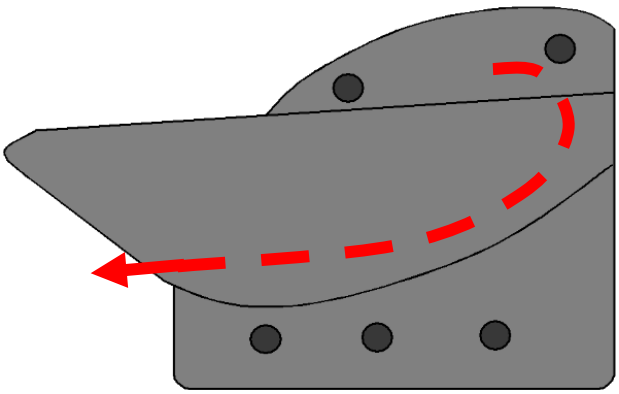
2. Insert the normalisation sheet, with the black end inserted first, face upwards.



3. Click “Full Normalisation”. This process takes approx. 1.5 minutes. Make sure the process is complete before shutting anything down or scanning.



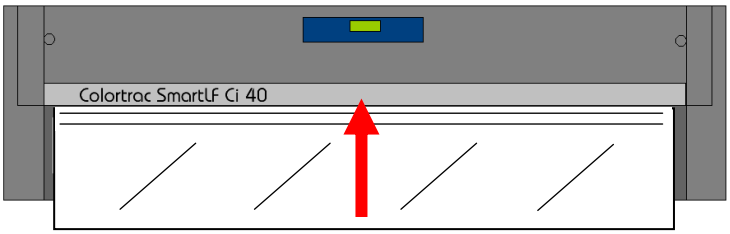
4. Forward the paper out through the scanner. Close utilities and run scan software as normal.



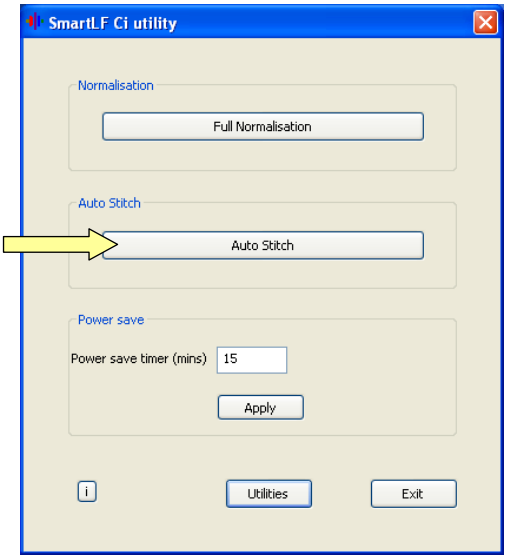
13.5. AUTO STITCH

1. Open Ci 40 utilities as described in Chapter 13.2

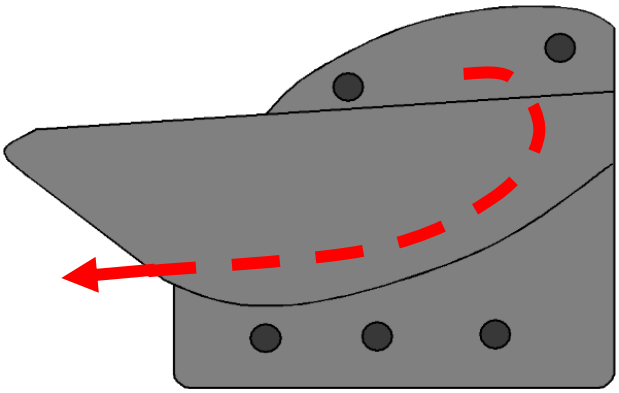
2. Insert the Auto Stitch target with the 2 x horizontal lines inserted first, face up.



3. Click “Auto Stitch”. This process takes a few minutes. Make sure the process is complete before shutting anything down or scanning.



4. Forward the paper out through the scanner. Close utilities and run scan software as normal.

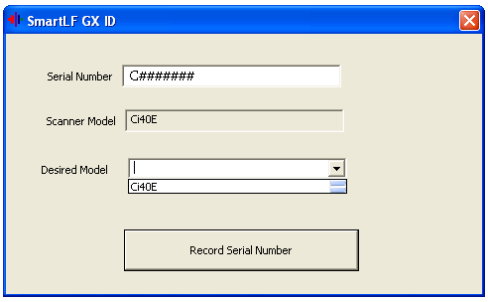


14. UPGRADING

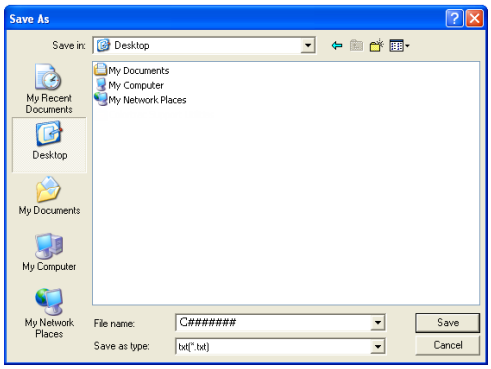
1. Ensure your Ci scanner is connected to your PC and the scanner driver and utilities are installed.

2. Insert the Installation CD provided with the scanner and select the upgrade utility

3. Enter your scanners serial number into the appropriate field and select the model you require using the drop down and scroll buttons. Then select 'Record Serial Number'



4. The utility creates a coded text file that contains details of the upgrade you require. Enter a name for the file and select a location for it. We recommend you select a file name that contains the scanner serial number and, for ease of use, you save the file to your Desktop.



5. Email the saved txt file to smartlf.upgrade@colortrac.com along with a purchase order for the upgrade.
6. You will then receive an email containing a zipped file, which when unzipped provides an executable file.
7. Ensuring the right scanner is connected initiate the executable file.
8. The scanner is now upgraded to the selected standard.

15. HELP DESK

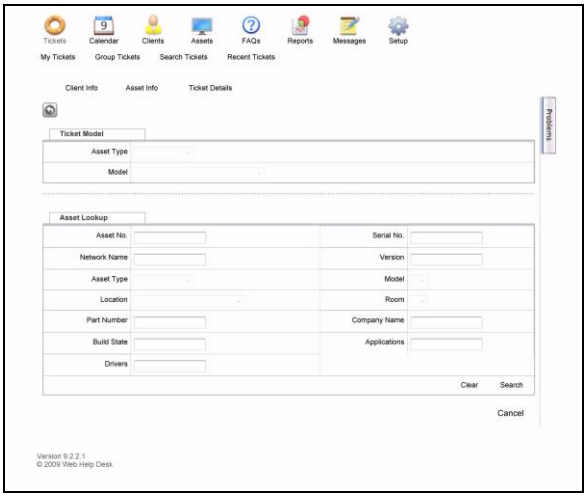
15.1. EXTENDING WARRANTY

1. Open Helpdesk www.colortrac-helpdesk.com

2. Enter your account details.

3. Create a new ticket

4. Go to the Asset Info tab, enter the serial number of the scanner in the appropriate box, and search. When the scanner is highlighted, choose that scanner.



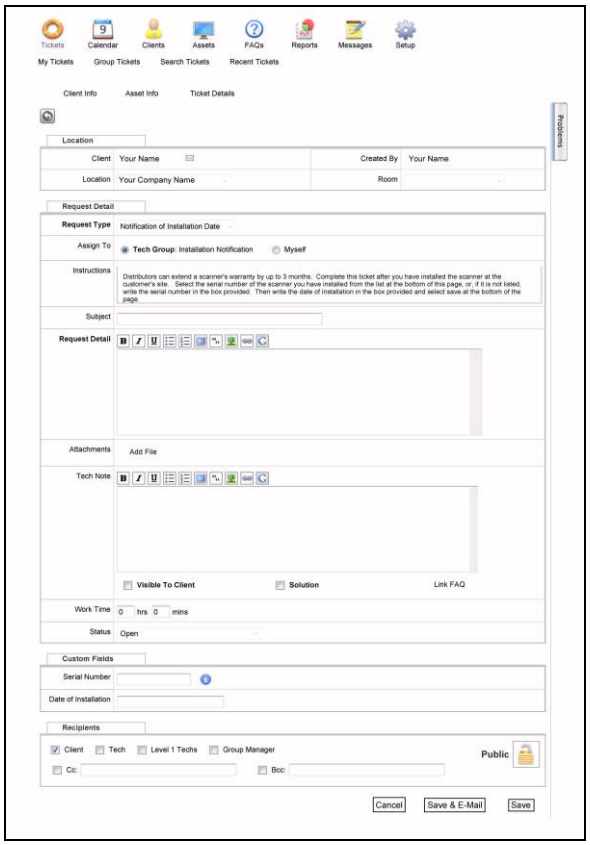
5. Go to the Ticket Details tab, and in the request type, choose ‘Notification of Installation Date’

6. Enter the serial number of the scanner

7. Enter the installation date, making sure that it is within the 3 month period since it was shipped out to your company, if not, the system will only take the 3 months date as the installation date.

8. Highlight ‘Client’ and ‘Tech’.

9. Press ‘Save and Email’



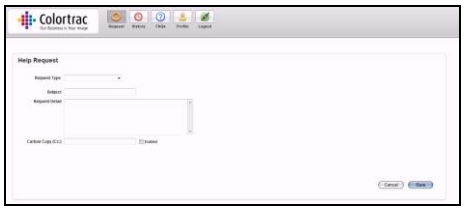
15.2. CREATING A HELPDESK TICKET

1. Go to Help Desk www.colortrac-helpdesk.com

2. Log in using your issues details.

3. Create a ‘New Ticket’

4. Choose the Request type i.e. the scanner model. Please make sure you choose the correct type of model as this will effect the support given.



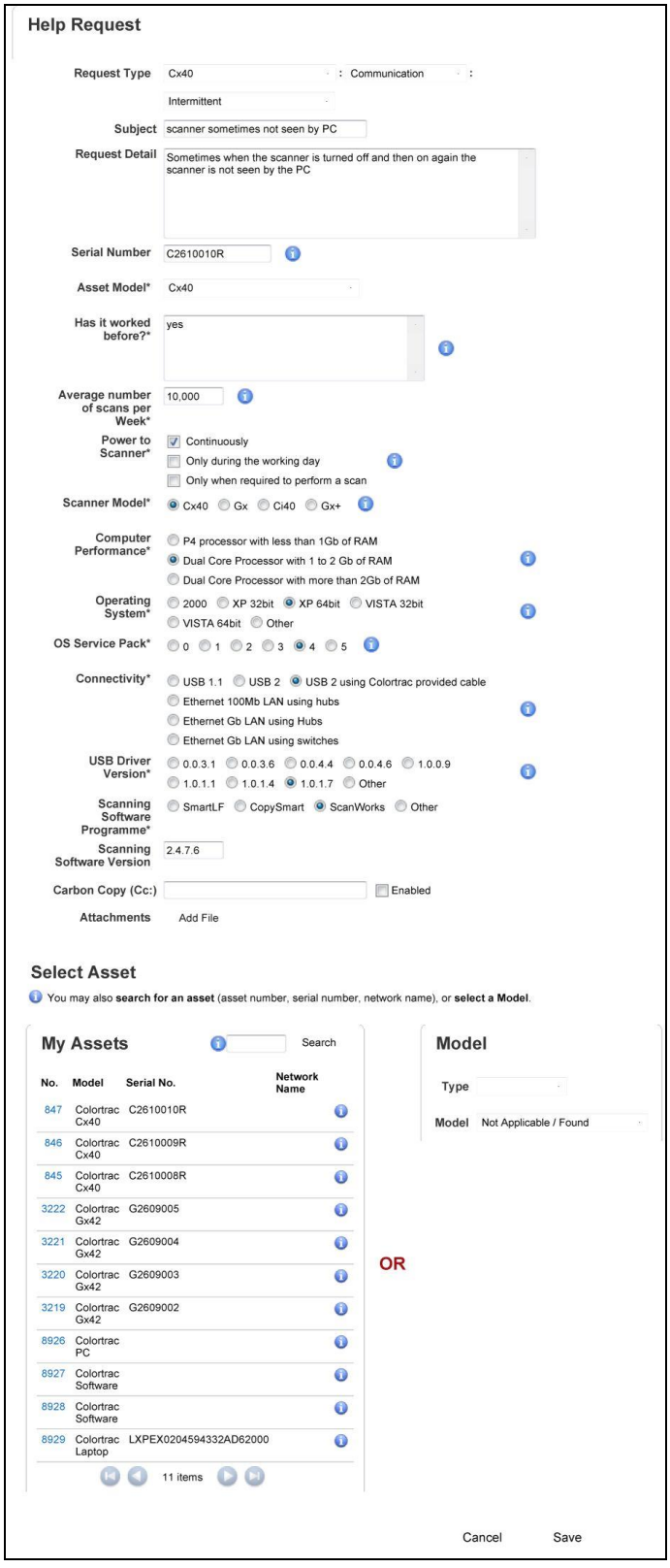
5. As information is given, extra boxes may appear which will go with the problem / scanner. Please make sure all information is given to assist with any support given. Once a scanner type is given, a list of assets (scanners) will appear at the bottom that are for your company only, choose the scanner serial number that is for the scanner being reported.

6. If an image problem is being reported, use the attachment button to attach a scanned image to illustrate the problem.

7. If a Cx40 is being reported, attach a dat file.

8. Once all information is given, click 'Save'. This will send the ticket to Colortrac Support where it will be issued to the person best suited to answer the problem. They will then add a new comment to the ticket, which will be emailed to the address provided when the log in details were issued.

NOTE: Sometimes question and suggestion will be sent to you. These are done to help with the support, and it is appriciated if they are tried and reported back in the ticket through the helpdesk. If the problem is solved, please also report this back to close off the ticket. Each different scanner or issue must have it's own ticket, do not put a number of issues on one ticket.



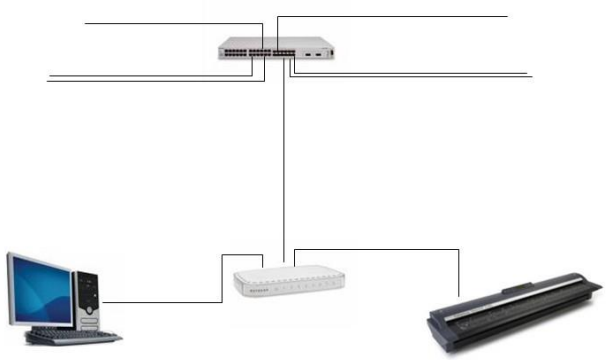
16. NETWORK CONFIGURATION

16.1. NETWORK COMPONENTS

DHCP Server	The DHCP Server manages the IP addresses of LAN components. Normally the DHCP Server is the LAN boundary router but can be a dedicated server. The Ci scanner does not support plug and play. For error free operation, to avoid IP conflicts, configure the DHCP Server to associate the Ci scanner's allocated IP with its MAC address.
IP Filters/Firewalls	Some firewalls and IP filters can restrict connectivity between the PC and the Ci scanner. Firewalls, whether client of network based, and IP filters, must be configured to permit a TCP protocol connection between the PC and ports 17236 (command) and 17237 (data) on the scanner. If different port numbers are used, firewalls should be programmed to accommodate these.
Network devices	Routers are network boundary devices. It should not be necessary to connect a PC to a Ci scanner through a router. It will be necessary to connect these through network hubs and switches. Either a hub, or the switch, connected to the scanner must be capable of Gbit. Connectivity cannot be established using 100Mbit, Fast Ethernet devices. For the best results, the connectivity between the PC and the Ci scanner should be over Gbit throughout.
Connecting cables	Cables connecting the Ci scanner to network devices must be to the standard Cat5e and Cat6.

16.2. NETWORK CONFIGURATION

Best practice	When the Ci scanner downloads a scan to a PC, it transfers a significant amount of data. This activity can significantly increase the network load. Best practice is to connect the Ci scanner to a PC through a switch spur. Should a hub be used, the main network would still be loaded unnecessarily.



The effects of network loading	It can take several minutes to download data from a scan to a PC via the LAN. This time can increase significantly if the network load is already high, particularly during network antivirus operations or at the beginning and end of the working day. Be connecting the Scanner to the PC using a switch spur these effects can be minimised.

16.3. NETWORK CONSIDERATIONS

Confirming network connectivity using ping and netstat

Two commands entered at the Command Prompt can be used to check the status of connectivity between the PC and the Ci scanner. These are the ping and the netstat -a commands.

To confirm that the PC is connected to the scanner use the ping command:
ping <scanner IP address> -t

To confirm that the PC has ESTABLISHED a connection with the scanner's command and data ports use the netstat command:
netstat -a

17. DIAGNOSTICS

17.1. INTRODUCTION

The diagnostic flow diagrams detailed below are designed to help technicians identify faults and other technical problems. They are a guide, they should not be considered exhaustive. Technicians should expect to adapt these diagnostics to their specific circumstances.

17.2. UPDATES

Diagnostics are updated regularly. For updates and further diagnostics please refer to the Colortrac Help Desk and Technical Support Web Site.

17.3. DIAGNOSTIC - NETWORK CONNECTION

Ethernet Check List For Colortrac Scanner (using the menu button on the control panel).

- Enter your company issued IP address into the scanner.
- Enter the Data Port address. (Recommended value of “17237”, unless company IT department uses a different value).
- Enter Command Port address. (Recommended value of “17236”, unless company IT department uses a different value).
- Make sure the MAC address gives a unique address. (If reads only ‘FF’s, please contact support@colortrac.com).

Ethernet Check List for Colortrac Software.

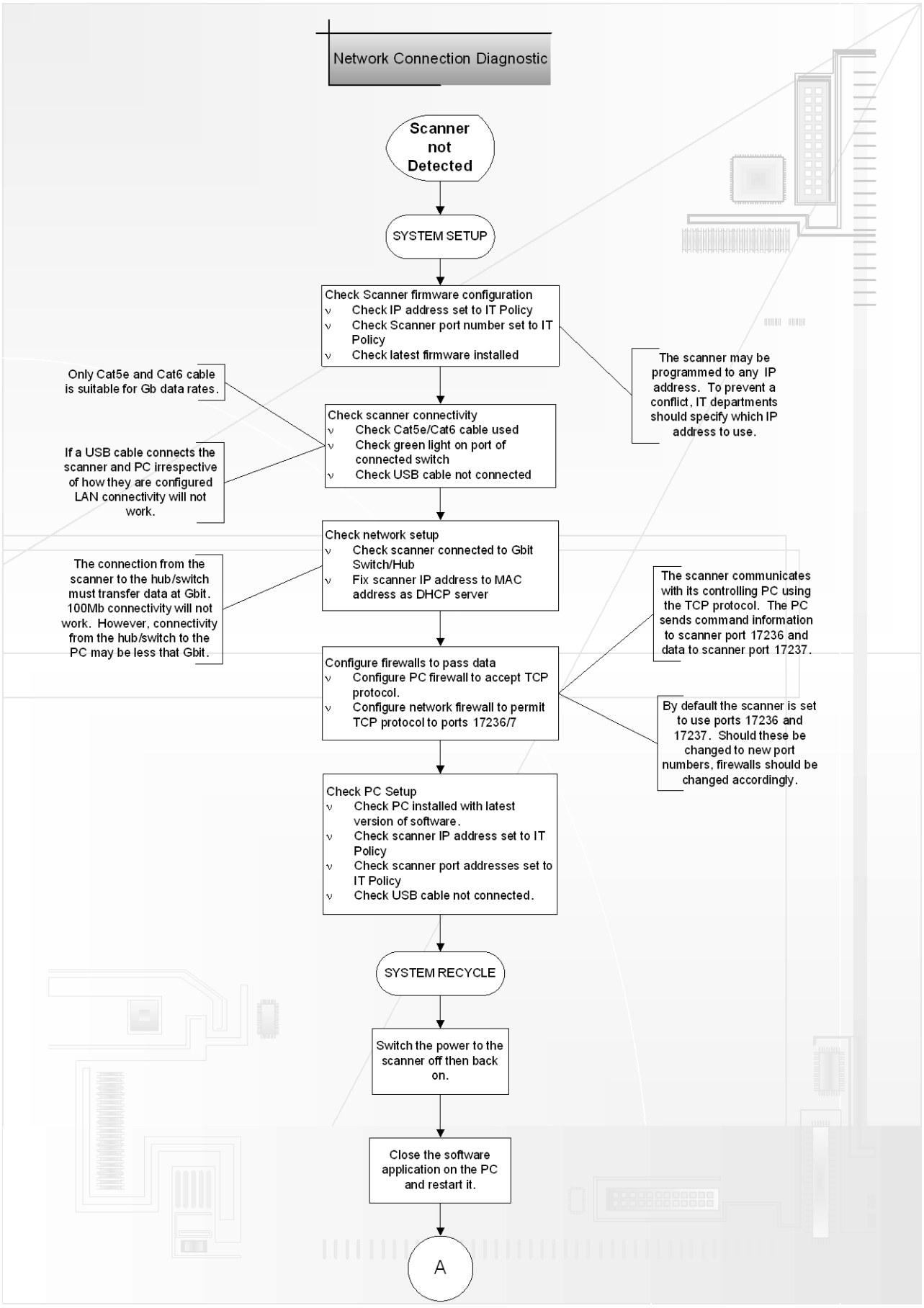
- Install the **Ethernet** driver, latest version on the company website (http://www.colortrac.com/support/support_downloads.htm).
- Enter the same company issued IP address as in the scanner.
- Enter the Data port value as entered in the scanner. (See table below for data info)
- Enter the Command port value as entered in the scanner. (See table below for data info)
- After entering all the information, shut down and re-open the software.

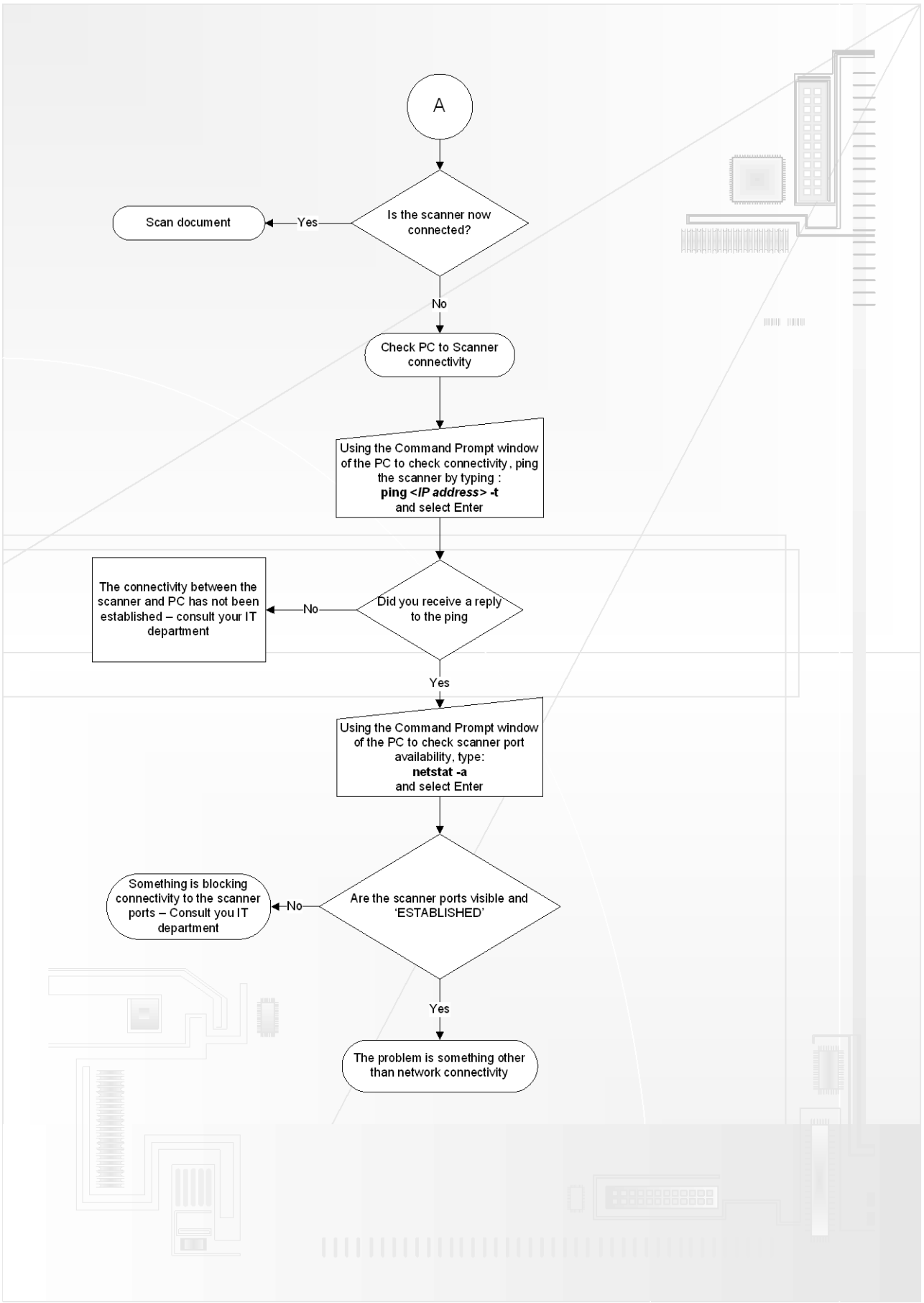
Make sure the software Ethernet settings are entered in all the Colortrac software/utilities in the same way. Refer to the user manual for reference to using the software/utilities

For further Ethernet diagnostics, follow the chart on the following pages.

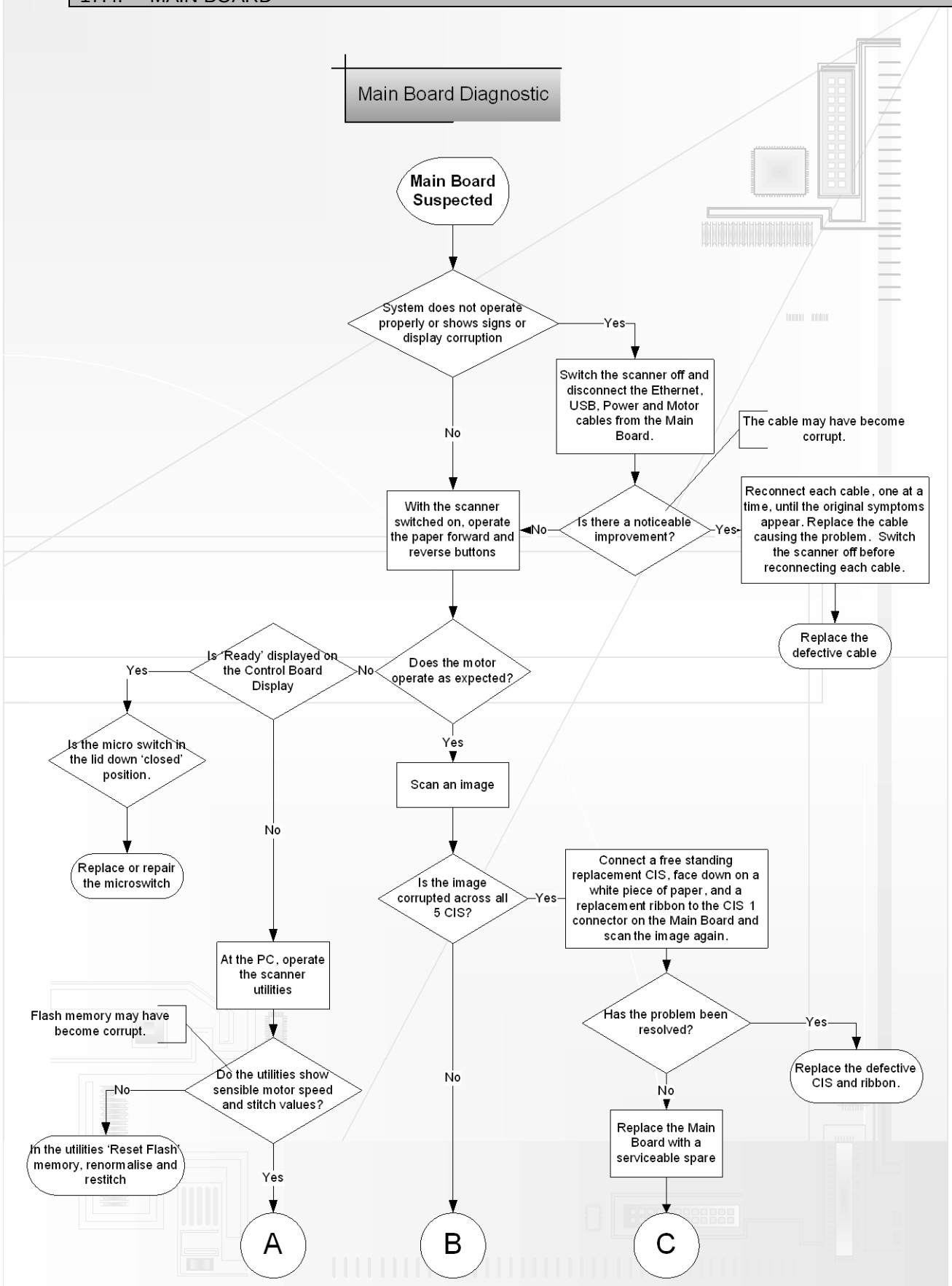
Port Settings

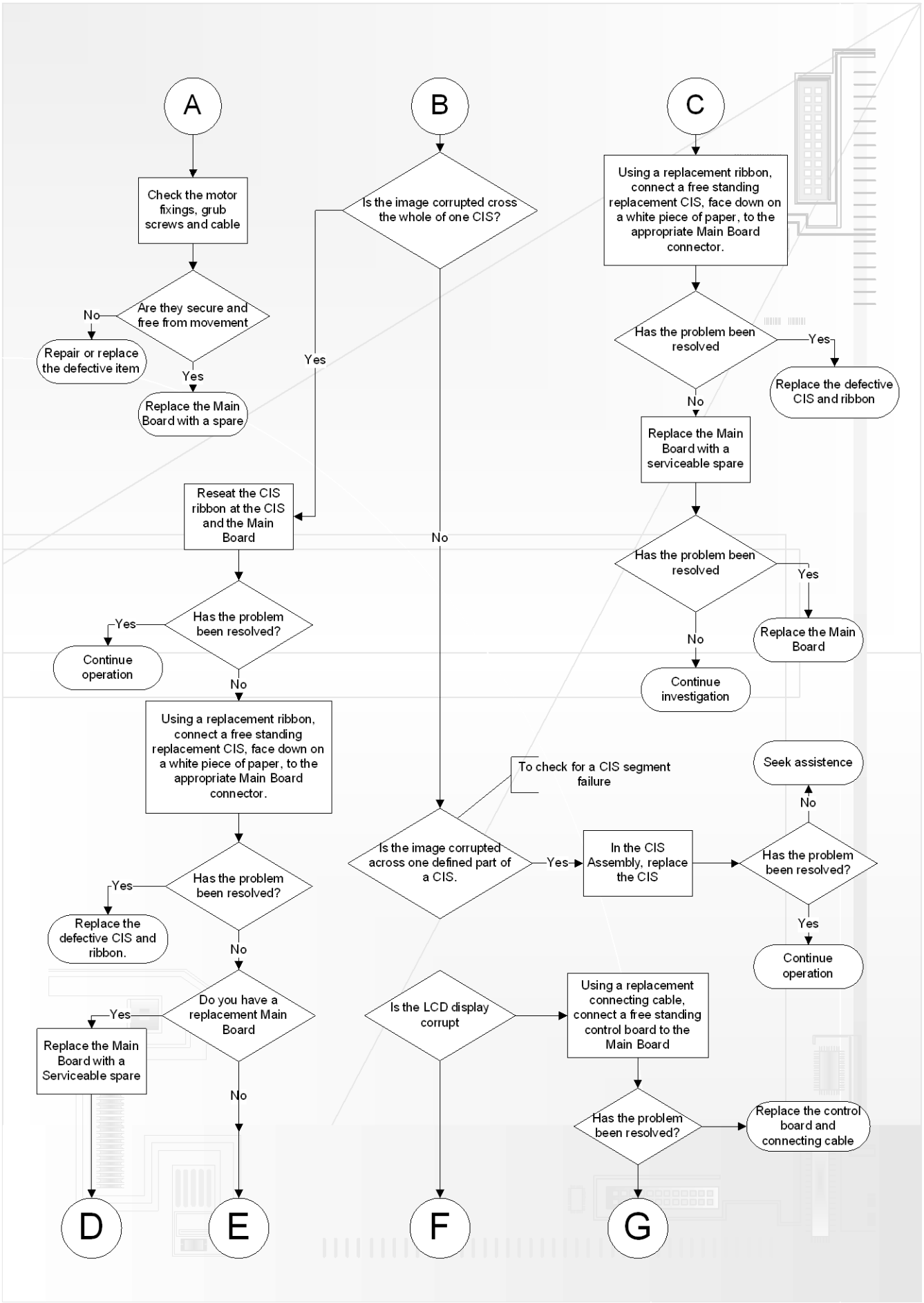
Recommended Value	ScanWorks / Utilities	SmartLF all in one	CopySmart
17236 (or same as scanner)	Command Port	Port 2	Port 1
17237 (or same as scanner)	Data Port	Port 1	Port 2

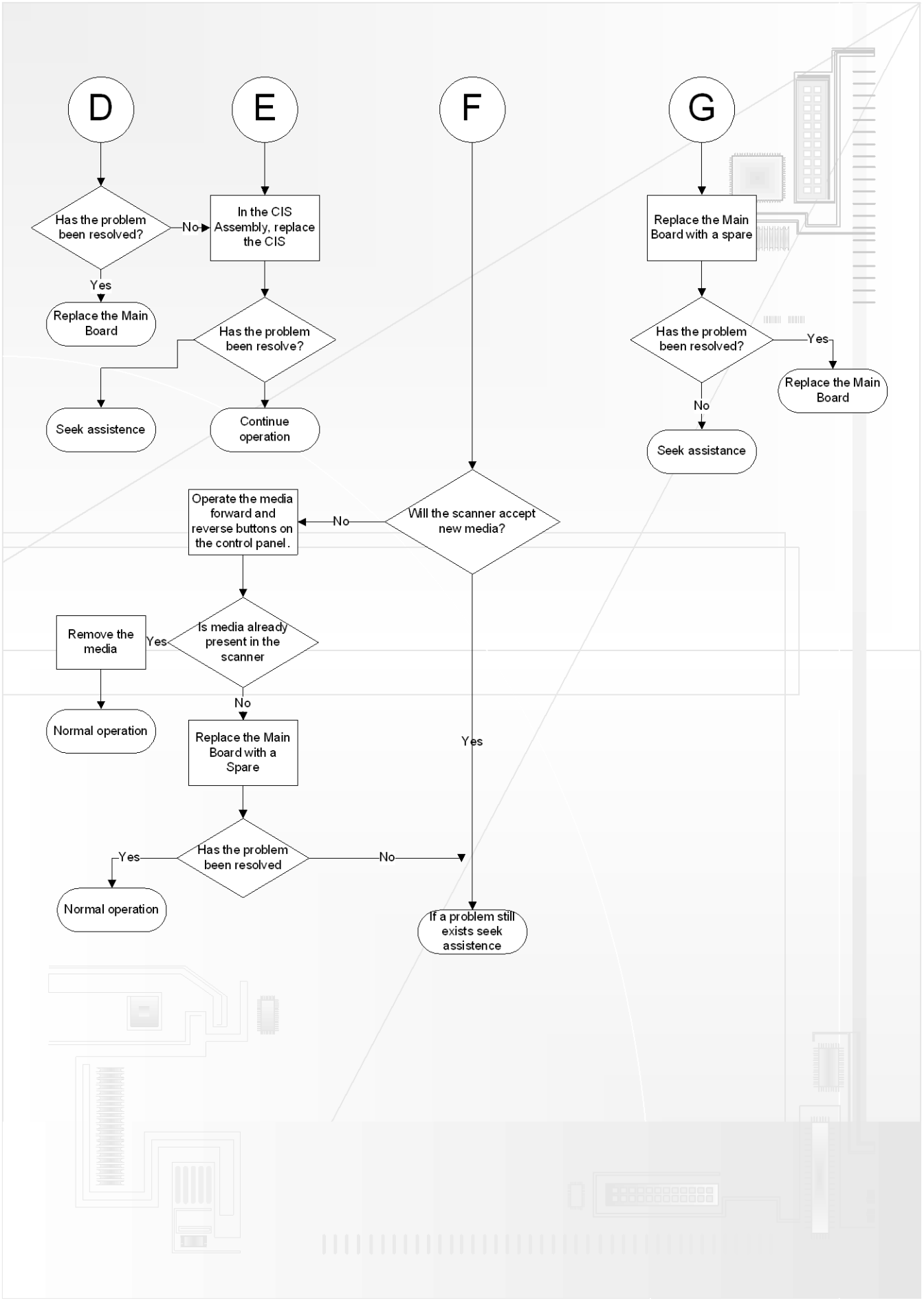

Network Connection Diagnostic
Scanner not Detected
SYSTEM SETUP
Check Scanner firmware configuration
ν Check IP address set to IT Policy
ν Check Scanner port number set to IT Policy
ν Check latest firmware installed
The scanner may be programmed to any IP address. To prevent a conflict, IT departments should specify which IP address to use.
Only Cat5e and Cat6 cable is suitable for Gb data rates.
Check scanner connectivity
ν Check Cat5e/Cat6 cable used
ν Check green light on port of connected switch
ν Check USB cable not connected
If a USB cable connects the scanner and PC irrespective of how they are configured LAN connectivity will not work.
Check network setup
ν Check scanner connected to Gbit Switch/Hub
ν Fix scanner IP address to MAC address as DHCP server
The connection from the scanner to the hub/switch must transfer data at Gbit. 100Mb connectivity will not work. However, connectivity from the hub/switch to the PC may be less that Gbit.
The scanner communicates with its controlling PC using the TCP protocol. The PC sends command information to scanner port 17236 and data to scanner port 17237.
Configure firewalls to pass data
ν Configure PC firewall to accept TCP protocol.
ν Configure network firewall to permit TCP protocol to ports 17236/7
By default the scanner is set to use ports 17236 and 17237. Should these be changed to new port numbers, firewalls should be changed accordingly.
Check PC Setup
ν Check PC installed with latest version of software.
ν Check scanner IP address set to IT Policy
ν Check scanner port addresses set to IT Policy
ν Check USB cable not connected.
SYSTEM RECYCLE
Switch the power to the scanner off then back on.
Close the software application on the PC and restart it.
A


A
Is the scanner now connected?
Yes
Scan document
No
Check PC to Scanner connectivity
Using the Command Prompt window of the PC to check connectivity, ping the scanner by typing : ping <IP address> -t and select Enter
Did you receive a reply to the ping
No
The connectivity between the scanner and PC has not been established – consult your IT department
Yes
Using the Command Prompt window of the PC to check scanner port availability, type: netstat -a and select Enter
Are the scanner ports visible and 'ESTABLISHED'
No
Something is blocking connectivity to the scanner ports – Consult you IT department
Yes
The problem is something other than network connectivity

17.4. MAIN BOARD


Main Board Diagnostic
Main Board Suspected
System does not operate properly or shows signs or display corruption
Yes
No
Switch the scanner off and disconnect the Ethernet, USB, Power and Motor cables from the Main Board.
The cable may have become corrupt.
With the scanner switched on, operate the paper forward and reverse buttons
No
Is there a noticeable improvement?
Yes
Reconnect each cable, one at a time, until the original symptoms appear. Replace the cable causing the problem. Switch the scanner off before reconnecting each cable.
Replace the defective cable
Is 'Ready' displayed on the Control Board Display
Yes
No
Does the motor operate as expected?
Yes
Is the micro switch in the lid down 'closed' position.
Replace or repair the microswitch
Scan an image
No
Is the image corrupted across all 5 CIS?
Yes
Connect a free standing replacement CIS, face down on a white piece of paper, and a replacement ribbon to the CIS 1 connector on the Main Board and scan the image again.
At the PC, operate the scanner utilities
Flash memory may have become corrupt.
Do the utilities show sensible motor speed and stitch values?
No
Yes
In the utilities 'Reset Flash' memory, renormalise and restitch
Has the problem been resolved?
Yes
No
Replace the defective CIS and ribbon.
Replace the Main Board with a serviceable spare
No
A
B
C


A
Check the motor fixings, grub screws and cable
Are they secure and free from movement
No
Repair or replace the defective item
Yes
Replace the Main Board with a spare
B
Is the image corrupted cross the whole of one CIS?
Yes
No
Reseat the CIS ribbon at the CIS and the Main Board
Has the problem been resolved?
Yes
Continue operation
No
Using a replacement ribbon, connect a free standing replacement CIS, face down on a white piece of paper, to the appropriate Main Board connector.
Has the problem been resolved?
Yes
Replace the defective CIS and ribbon.
No
Do you have a replacement Main Board
Yes
Replace the Main Board with a Serviceable spare
No
D
E
To check for a CIS segment failure
Is the image corrupted across one defined part of a CIS.
Yes
In the CIS Assembly, replace the CIS
Has the problem been resolved?
No
Seek assistence
Yes
Continue operation
Is the LCD display corrupt
Using a replacement connecting cable, connect a free standing control board to the Main Board
Has the problem been resolved?
Replace the control board and connecting cable
F
G
C
Using a replacement ribbon, connect a free standing replacement CIS, face down on a white piece of paper, to the appropriate Main Board connector.
Has the problem been resolved
Yes
Replace the defective CIS and ribbon
No
Replace the Main Board with a serviceable spare
Has the problem been resolved
Yes
Replace the Main Board
No
Continue investigation


D
E
F
G
Has the problem been resolved?
No
In the CIS Assembly, replace the CIS
Yes
Replace the Main Board
Has the problem been resolve?
Seek assistence
Continue operation
Replace the Main Board with a spare
Has the problem been resolved?
Yes
Replace the Main Board
No
Seek assistance
Will the scanner accept new media?
No
Operate the media forward and reverse buttons on the control panel.
Remove the media
Yes
Is media already present in the scanner
No
Normal operation
Replace the Main Board with a Spare
Yes
Has the problem been resolved
Yes
No
Normal operation
If a problem still exists seek assistence

18. FEATURES NOT INCLUDED

The following information is not included in this Manual:

- Parts Prices (please see Colortrac Technical Support Site)
- Parts Weights and Dimensions
- Reliability Data